An Address

ON

THE EXOTIC FLORA OF THE UTERUS IN RELATION TO FIBROIDS AND CANCER.

DELIVERED BEFORE THE BRADFORD MEDICO-CHIRURGICAL SOCIETY ON THE OCCASION OF ITS JUBILEE, JANUARY 21ST, 1913,

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IN the year 1910, at the Middlesex Hospital, the uterus was removed for fibroids on 65 occasions, and all the women recovered. During the same period the uterus was extirpated for cancer of its neck in 17 women, and of these 4 died. The annual report for that year shows that 13 patients with cancer of the cervix uteri were examined under an anaesthetic and found to be "inoperable." In 5 more women with the same disease the condition of the pelvic organs was examined through an incision in the abdominal wall, and proved to be unsuitable for hysterectomy. Thus, out of 35 women with this terrible disease 17 were selected with extreme care as suitable for hysterectomy, and of these 4 died from the operation or its sequelae.

Although these facts are taken from the reports of one hospital, the results are by no means peculiar to it. An examination of the reports of some other hospitals in London reveals practically the same picture. In the year 1910 abdominal hysterectomy was performed for fibroids in seven hospitals in London on 370 patients with 9 deaths:

	Cases.	Deaths.
Middlesex	65	0
Chelsea (for Women)	113	2
Samaritan (for Women)	53	3
New (for Women)...	41	1
University	14	0
St. Thomas's	50	3
St. Bartholomew's	34	0
	370	9

In that year (1910) abdominal hysterectomy was performed for cancer of the neck of the uterus in the same hospitals as in the preceding table on 81 patients with 13 deaths:

	Cases.	Deaths.
Middlesex	17	4
Chelsea (for Women)	12	2
Samaritan (for Women)	17	1
New (for Women)...	12	0
University	9	2
St. Thomas's	11	3
St. Bartholomew's	3	1
	81	13

The explanation of the difference in the results of removing the uterus for fibroids and for cancer of the neck of the uterus is simple and interesting. It depends mainly on the flora of the uterus.

Bacteriology of the Female Genital Tract.

A large amount of patient labour has been expended in investigating the bacteriology of the female genital tract. The varieties of micro-organisms found there are numerous, but the chief are the gonococcus, streptococcus, staphylococcus, and the tubercle bacillus. Of these the gonococcus attacks mainly the mucous membrane, and is more destructive to function than to life. The streptococcus flourishes in loose connective tissues, and when this tissue is vascular, as in the neighbourhood of the uterus, the micro-organism enters blood vessels and lymphatics. It invades the uterine and periuterine tissues through breaches of continuity in the genital tract caused by childbirth, miscarriage, operations on the uterus, and criminal abortion. The streptococcus is especially destructive to life and often flourishes in company with the staphylococcus, *Bacillus coli communis* and *Bacillus pyocyaneus*.

Until the advent of puberty the uterus is functionless and free from micro-organisms. When the girl becomes pubic and sexual life is established, she runs risks from two sources: Infection when the male suffers from urethritis, especially gonorrhoea; and, if she become pregnant, the danger of accidental sepsis at the lying-in. The infection has unfortunate results; some of the patients die. In others the infective agents die, the inflammatory changes in the tissues subside, but the essential organs of reproduction are often so damaged that these infected women become chronic invalids, incapable of conceiving.

The common agents of wound infection are universal in civilized communities; they are present in dust, soiled clothes, dirty surgical instruments, and the like. They exist in suppurating sores on the fingers of doctors, midwives, and nurses, and on the body of the patient. The transmission of pathogenic micro-organisms can only be avoided by scrupulous cleanliness. The leading features of septic infection of the puerperal uterus are well-known. A woman with a submucous fibroid in her uterus, like a pregnant woman is very liable to become septic, but with this difference: Pregnancy terminates at some date within a period of thirty-six weeks, but a fibroid may be retained for thirty-six years, and during the whole of this period the uterus persistently endeavours to extrude it. These extruding efforts dilate the mouth of the uterus and open the door to pathogenic micro-organisms. In fact, a woman with a submucous fibroid is like a parturient woman with a retained piece of placenta and is menaced with the liability of septic infection as long as she retains it. When the uterus succeeds in extruding a submucous fibroid into the vagina and the condition is recognized, the surgeon promptly removes the tumour and no harm follows; but when the extruded fibroid is allowed to remain, it becomes oedematous because its circulation is interfered with, or the surface of the tumour may be abraded, or ulcerated. Breaches of continuity of its surface allow micro-organisms, present in the vagina, to colonize the tumour and convert its tissues into a stinking, decomposing slough. The infection extends to the endometrium and a condition identical with puerperal fever is established. An extruded uterine polypus the size of a golf ball infected with streptococci sometimes destroys life quicker than a virulent cancer.

A woman with cancer of the neck of the uterus is in much the same condition as one with an extruded and septic fibroid, for the cancerous tissues soon become invaded with pathogenic flora; of these the steptococcus is the most deadly. The micro-organisms which flourish in cancerous tissue make this disease so destructive to life; the streptococci in uterine cancer are very virulent, especially for the peritoneum.

The Relics of Bacterial Invasion.

The tolerance of the tissues in regard to micro-organisms varies enormously. For example, the gonococcus thrives and multiplies for a time and then dies out, but leaves its mark in the pelvis in the form of occluded Fallopian tubes, pyosalpinx, and adhesion of the uterus to the bowels, the omentum, bladder, and adjacent peritoneum. A woman with subserous fibroids is as liable to contract gonorrhoea as one free from such tumours, but when the infecting exudate leaks into the pelvis, in addition to its damaging effect in cementing the ovaries and tubes to each other, and sealing up the tubal ostia, it glues the surface of a subserous fibroid to any adjacent viscus. In my early operations on acute chronically infected tubes and ovaries I was often astonished that patients recovered after a large pus sac had burst in the course of removal and drenched the pelvic organs with pus. This led me to have a careful bacteriological investigation made as a routine measure of all tubes removed for inflammatory troubles. They were, as a rule, sterile. Occasionally in a pyosalpinx, which had burst through the rectum and then refilled, the reaccumulated pus would contain the colon bacillus or the streptococcus. It was in the course of this investigation I obtained conclusive evidence that gonorrhoeal exudate leaking into the pelvic cavity sets up peritonitis; in the acute stage the gonococcus can be obtained in pure culture from the peritoneal exudate. This is no longer disputed.

Uterine Infections form Two Groups: Puerperal and Non-puerperal.

Clinically uterine infections form two groups—puerperal and non-puerperal. In the former group the streptococcus is the dominant organism and in the latter the gonococcus. Both organisms cause destructive changes in the tubal tissues; after the micro-organisms have died out, there is nothing in the lesions which enables us to decide whether the damage to the tissues was caused by a gonorrhoeal or a mild streptococcal infection. In clinical terms this means it is impossible to decide in a chronic case whether the trouble began as a puerperal or a non-puerperal infection. The tendency for micro-organisms to die out also applies to tuberculous lesions; it requires much patience to demonstrate the presence of the tubercle bacillus in tuberculous disease of the tubes and endometrium. This bactericidal power of the tissues explains the success which attends surgical enterprises on the Fallopian tubes and the uterus when they are damaged as the result of chronic infection.

Sixteen years ago I satisfied myself that in tubal lesions—such as pyosalpinx, tubo-ovarian abscess, and hydrosalpinx—it was rare in the chronic stages to find micro-organisms in the diseased tissues. This was a stumbling-block in determining the factor which caused the initial lesions. It interested me to find that Dr. N. F. Lock, in an excellent investigation carried out at St. Thomas's Hospital (1911), has come to the same conclusion.

I have again felt it necessary to inquire into the micro-organisms of the uterus in order to seek an explanation for the extraordinary frequency with which pulmonary embolism occurs after hysterectomy for fibroids and for cancer, whilst it is unknown to me after operations performed for lesions due to the gonococcus.

The Spectre of Convalescence after Hysterectomy.

Among the many advances in surgical art which have taken place since the foundation of this society in 1863 the establishment of pelvic surgery holds a foremost place. At that date the word "hysterectomy" was uncoined. The principles concerned in the transport, destiny, and effects of emboli had just been made plain; pyaemia was endemic in every hospital and antiseptics unknown, and the surgical treatment of uterine fibroids was attended by such a heavy mortality that the removal of the uterus ranked as one of the most dangerous operations in surgery. To-day a subtotal hysterectomy for fibroids is one of the safest and most beneficent operations in the whole range of surgery; but I regret to add that there is one danger connected with this operation which invests it with peculiar anxiety—namely, fatal pulmonary embolism. Indeed, every surgeon who has had much experience of hysterectomy fears this sequel, for it occurs so suddenly and so unexpectedly in patients who are apparently making a satisfactory recovery that this tragic occurrence may be spoken of as the spectre of convalescence.

It is difficult to determine the actual frequency of pulmonary embolism as a sequel of hysterectomy, for surgeons are very reluctant to publish their experience; but there is sufficient evidence available to give some notion of its relative frequency and the variations met with in the practice of different surgeons. Baldy states that among 366 operations for fibroids in the Gynecean Hospital, Philadelphia, there were 13 sudden deaths attributed to embolism. In the Middlesex Hospital from 1896–1906, both years inclusive, there were 212 abdominal hysterectomies for fibroids, and of these patients 3 died from pulmonary embolism. At the New Hospital for Women, London, during 1901–1910 hysterectomy was performed for fibroids on 189 patients, and of these 2 died from embolism.

In the practice of individual surgeons the frequency of fatal pulmonary embolism varies widely. Lyle, among 8 subtotal hysterectomies for fibroids, lost 1 patient; H. R. Spencer lost 2 patients from this cause out of 85 total hysterectomies, and Olshausen lost 5 patients among 366 who had hysterectomy performed for fibroids. Among 1,500 abdominal operations for fibroids I lost 3 patients from pulmonary embolism. A broad study of statistics indicates that in the practice of some surgeons fatal pulmonary embolism occurs in at least 1 per cent. of the patients who have abdominal operations performed for fibroids. This tragic mode of death is more frequent after total than subtotal hysterectomy; it is a recognized sequel of hysteropexy, and the risks of its occurrence after abdominal hysterectomy for cancer is higher than for any other pelvic operation. These figures refer to fatal pulmonary embolism. It is not uncommon for women recovering from hysterectomy to be seized with sudden pain in the chest severe enough to fill them with alarm. Such attacks are usually followed by fever and the ejection of bloodstained sputum. The symptoms gradually subside. These attacks are often due to the lodgement of small emboli in branches of the pulmonary artery.

Thrombosis from the use of Buried Sutures.

At the Hunterian Society, London, in 1909, I attributed the frequency of pulmonary embolism after hysterectomy to infection of the buried sutures used to close the abdominal incision, the channels of infection being the epigastric veins. Being desirous of ascertaining the bacteriologic condition of the cervical canal and the uterine cavity of women with fibroids, I had a series of observations made in cases of subtotal hysterectomy. The investigation was conducted by two independent observers (Mr. Somerville Hastings and Mr. C. H. S. Webb) and their findings tallied uniformly and were confirmed by the clinical course of the patients. In the majority, especially nulliparous spinsters, the cervical canal and uterine cavity were sterile; in married women who have had children, and in whom the mouth of the womb is patulous, staphylococcus, *Bacillus coli*, and Döderlein's bacillus occur. The proportion of cases is small in which micro-organisms are found, but they are more common in a uterus containing a submucous fibroid in a woman who has had children than in that of a nulliparous spinster with a narrow cervical canal.

In regard to the fibroids, I have had very many examined, especially those which have undergone degenerative changes, such as softening and red degeneration. In all cases except one they have been sterile, the exception being a subserous fibroid in a gravid uterus; the tumour was in the condition known as red degeneration, and contained staphylococci. The comparative freedom of the uterus from pathogenic micro-organisms explains the great success of subtotal hysterectomy.

Femoral thrombosis and fatal pulmonary embolism are recognized sequels of hysteropexy. In this operation, if the retaining sutures traverse the endometrium and it be septic, the sutures will become infected and cause trouble. A study of thrombosis occurring under such conditions led me to believe that the factors which produce changes leading to thrombosis of the external iliac or the femoral veins are the buried sutures in the abdominal incision. I made a series of trials in which a number of abdominal incisions were closed with buried silk sutures, also a series of cases in which through-and-through sutures were employed. However carefully the suture material is prepared and inserted with hands covered with sterilized rubber gloves, now and then a buried suture will give trouble. Even when the sutures appear to settle down without disturbance they often cause slight rises of temperature.

For a period of two years I buried no sutures in an abdominal incision, except in one patient. During that period I had no post-operative thrombosis, and only one case of pulmonary embolism, and this happened to the patient in whom I closed the wound with buried sutures. She was a midwife on whom I performed hysterectomy for a big submucous fibroid, and as this woman was very stout and led an active life, it seemed expedient to take every precaution to secure a sound scar. This patient seemed to be making a satisfactory recovery, but on the eighth day her temperature rose to 103° F. On examination some hardness could be felt in the lower portion of the wound. I warned the house-surgeon that there was probably thrombosis of the deep veins, and impending danger of pulmonary embolism. She died suddenly a few hours later, and an embolon was found at the *post-mortem* examination firmly plugging the pulmonary artery.

In 1902, Clark, of Philadelphia, published some observations on post-operative femoral thrombo-phlebitis, especially as a sequel to coeliotomy. He believes that it has its origin as a primary thrombus of the deep epigastric

veins due to injury of the edges of the incision by metal retractors. The thrombosis is slowly propagated along the vessel to the external iliac vein, and by retrogressive thrombosis to the femoral vein. He also published a very convincing case. A woman aged 32 had hysteropexy performed for retroflexion of the uterus. The vermiform appendix was removed at the same operation. Thirteen days later there was well-marked femoral thrombosis. Two months later, the patient's condition being unsatisfactory, the abdomen was reopened; the right ovary and tube, being inflamed, were removed. In the course of the operation the right epigastric veins were found to be varicose and inflamed. They were "like dense cords as large as goose-quills." The epigastric vein was obstructed at its entrance into the iliac vein.

It will be obvious to any one who has studied the flora of the uterus that the surgeon's fingers must become contaminated by handling the tissues of the cervix in the course of a total or subtotal hysterectomy, when the uterus contains pathogenic micro-organisms. It is, of course, true that the uterus, in a large proportion of patients, is sterile, but micro-organisms are present in a sufficient number of cases to account for the frequency of inguinal thrombosis as a sequel of hysterectomy.

The excessive frequency with which inguinal thrombosis follows total abdominal hysterectomy, performed for cancer, is worth bearing in mind, for cancer in the neck of the uterus almost invariably teems with streptococci and staphylococci. Of these cocci, the former are notorious agents in causing thrombi to form in blood vessels. The deep epigastric veins are in intimate relation with the wound area when the abdomen is opened by a median subumbilical incision, whether the cut be made in the linea alba or to one side of the middle line in the belly of the rectus muscle. The branches of the vein collect the blood from the subcutaneous as well as from the subserous tissue in the parts adjacent to the linea alba. Some of the branches bleed freely when they happen to be transfixed by a needle in the process of suturing the wound. The deep epigastric artery is accompanied by two veins (venae comites) and they become confluent immediately above the spot where the conjoint vein enters the external iliac vein.

Pulmonary embolism is more frequent after abdominal than after vaginal operations; useful evidence is furnished by Klein, who collected the statistics of the Bettina-stiftung (Vienna), and found 9 fatal cases of pulmonary embolism in 1,720 abdominal sections. During the same period there was no instance of fatal embolism among 1,992 vaginal operations. Wertheim in a recent discussion on this matter admitted that in his practice thrombosis was three times more frequent after abdominal section for myoma than after vaginal myomectomy and hysterectomy for fibroids. It is unnecessary to adduce further figures, because this opinion is accepted by most surgeons who have had a wide experience in this class of surgery, but the evidence furnished by Klein is good circumstantial evidence towards implicating buried sutures as causative agents in the production of the primary thrombosis. Having satisfied myself that the fingers of the surgeon do become contaminated in the course of abdominal hysterectomy when the cervical canal contains micro-organisms, and in this way infect the suture material in the course of the operation, I adopt the following preventive measures:

After amputating the body of the uterus I apply iodine by means of a piece of cotton-wool on a probe to the cervical canal, and also lightly swab the cut surface of the stump with tincture of iodine before tying the vessels and introducing the mattress sutures. In a total hysterectomy I carefully swab the cut edges of the vagina with tincture of iodine before ligaturing the vessels. This trifling modification in procedure has a great influence for good on the post-operative course of the case.

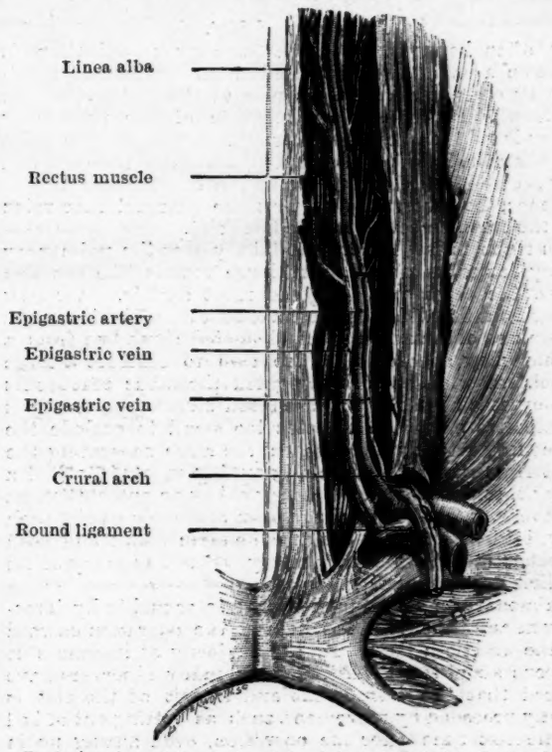
After completing the pelvic part of the operation I wash my gloves with warm soap and water, and rinse them thoroughly with warm water and dip them in a solution of perchloride of mercury (1 in 5,000) before introducing the sutures. In clean cases I insert three or four silk sutures (No. 2) to bring the fascia together, and the wound is closed by a series of through-and-through sutures.

In operating for conditions known to be septic no sutures should be buried in closing the abdominal incision.

Suture Material.

It is the fashion to lay the blame for stitch abscess after hysterectomy upon the suture material, or on the method employed for sterilizing it. I have endeavoured to show that, in spite of every precaution, buried sutures are liable to be infected in the course of this operation when the cervical canal contains micro-organisms. For many years I have employed silk thread as suture material exclusively. The thread, wound on a spool, is boiled for an hour, reboiled immediately before use, and inserted with the hands protected by sterilized rubber gloves.

As evidence that buried sutures used to close the abdominal wall in pelvic operations are liable to become infected by the surgeon's fingers and thus become the cause of suture abscess, I will describe what happens in operations for the removal of the breast. When this organ is amputated for a non-ulcerating cancer, if the cancerous focus be examined with the caution usually displayed in bacteriological investigations it will be found



Posterior view of the rectus abdominis muscle below the level of the umbilicus. The origin of the deep epigastric artery and the termination of the vein is shown. Venous branches are seen coming through the muscle.

free from micro-organisms. Therefore, if the surgeon has taken care that the skin overlying the operation area has been carefully treated with the antiseptic solutions usually employed for this purpose, and his hands, tools, and material used for haemostasis have been rendered germ free, the wound heals speedily and soundly. During the past fifteen years I have used fine silk thread exclusively for ligatures.

During this period I have removed the breast more than 300 times, and each operation requires on an average ten ligatures. This experience concerns 3,000 pieces of silk. Throughout the whole of this period I have had no trouble from these buried ligatures; and throughout the whole of my surgical work, in hospital and private, I have never had a patient die in consequence of amputation of the breast. I mention these facts because they support my contention that buried sutures, used to ensure a firm scar after abdominal hysterectomy, often defeat the purpose for which they are inserted because they become infected by the surgeon's fingers when the cervical canal contains infective organisms.

One of the most conspicuous features connected with pulmonary embolism, apart from its suddenness and the rapidity with which it sometimes causes death, is its unexpectedness. Inguinal thrombosis after abdominal

pelvic operations is by no means uncommon, but it is an extremely rare event for pulmonary embolism to happen in this form of thrombosis. The oedema of the leg associated with this common form of thrombosis is usually attributed to obstruction of the iliac and femoral veins by internal clot, but there is in addition infection of the lymphatics, and this causes a hard painful swelling of the thigh in consequence of interference with the lymphatic circulation. Surgeons know well that during operations in the armpit the axillary vein is occasicnally cut. This accident is easily repaired by the application of a ligature to the vein above and below the opening. No oedema of the limb follows. When the axillary lymphatics are blocked by perilymphangitis due to an extension of mammary cancer, a solid oedema of the limb ensues. This is true of the lower limb. The femoral vein is sometimes wounded accidentally by the surgeon in the course of an operation, but it is safely controlled by an encircling ligature placed above and below the hole in the wall of the vein. No oedema follows, nor is the circulation in the limb impaired.

Reservoirs of Clot.

It often happens that a *post-mortem* examination is made on a patient who has died in consequence of a pulmonary embolism, and the source of the embolus cannot be found. In considering embolism of the pulmonary artery in relation to hysterectomy it is necessary to point out that the pelvis contains two potential reservoirs of blood clot—the iliac veins and the ovarian veins. Experience, however, teaches that the external iliac veins are the common source of the fatal clot.

An embolus large enough to fatally plug the pulmonary artery comes, as a rule, from large vessels like the iliac veins, the caval veins, or the right auricle. Virchow pointed out that it is not uncommon for an entire thrombus to slip out of a vein, and an elongated thrombus from a venule may appear to be too thin to obstruct a large vessel, but, when such an elongated thrombus reaches its destiny, it is doubled up by the blood stream and serves as an effective plug. An embolus too small to occlude the pulmonary artery may lodge on the ridge separating the right from the left branch, becoming what is called a riding thrombus; such a clot may act as an autochthonous thrombus, and induce the formation of additional clot such as will fill and fatally occlude the main trunk and both branches of the pulmonary artery, as well as many of its subdivisions in the lungs.

Pulmonary embolism may occur as a sequel to hysterectomy at any time from the hour of the operation onward to the thirtieth day. In the majority of instances it happens about the twelfth day, and many observers have noticed that the detachment and transit of the clot is usually preceded by movement, such as getting out of bed for the first time after the operation, even sitting up in bed, but more particularly in straining during defaecation; sometimes it is deferred until the patient is apparently well, and when about to leave the hospital she may fall dying across the bed, on the floor of the ward, or in the courtyard of the hospital. The periodical literature of surgery and gynaecology contains many instances of these dramatic forms of sudden death due to post-operative pulmonary embolism.

The Bacteriology of the Clot.

The bacteriology of the clot is an interesting matter in relation to thrombosis and embolism. In the opening remarks it was mentioned that the common organisms found in infected uteri are streptococcus, staphylococcus, gonococcus, and the colon bacillus. The common micro-organism found in thrombi and emboli is the streptococcus; it is sometimes mixed with the staphylococcus, the *Bacillus pyocyaneus*, or the colon bacillus, but never the gonococcus. This is a matter of great interest. Extensive pelvic operations are often performed for damage caused to the uterus and the Fallopian tubes by the gonococcus, sometimes in the acute, but more often in the chronic stage of the disease. I have never had a case of pulmonary embolism as a sequel of an operation on the uterus or tubes when the lesion was the consequence of a gonorrhoeal infection. This seems to show that the gonococcus causes great irritation of tissues, and produces masses of adhesions, but does not coagulate blood. The facility with which the streptococcus causes blood to coagulate in the living vessels is well known, and the extreme frequency with which thrombosis and its sequel, embolism, occur in connexion with cancer of the uterus is explained by the partiality which streptococci manifest for exposed cancerous tissue.

M. B. Schmidt found that when cancer particles enter the blood streams by invading lymphatics and veins they excite thrombosis, and the thrombus contracts upon and may ultimately destroy them. This prophylactic power of the blood prevents colonization of the blood stream, but I hold the opinion strongly that the thrombosis around the cancer particles is incited by the micro-organisms or their toxins which these cancer fragments contain.

It is undeniable that death from pulmonary embolism is especially frequent after abdominal hysterectomy performed for cancer of the uterus; it is far more frequent than after the removal of the uterus for fibroids, and the evidence indicates that the greater frequency of this catastrophe in operations for cancer of the uterus depends on the greater luxuriance of the flora in cancerous tissue, and that the streptococcus, of all the forms of micro-organisms which abound in such uteri, holds the greatest "enmity with blood of man."

In order to improve the results of abdominal hysterectomy performed for fibroids, surgeons must be more careful and more moderate in the use of buried sutures when closing the abdominal incision.

The risks of operations for cancer of the neck of the uterus will be lessened when surgeons, with the aid of bacteriologists, devise means to rid cancerous tissues of noxious organisms before undertaking hysterectomy. The widespread tilling of the pelvic connective tissue inseparable from the operation ironically called radical abdominal hysterectomy favours the sowing, growth, and rapid multiplication of streptococci, with the result that in many instances Death becomes the reaper.

It must be obvious to all thoughtful men that the surgeon in the operating room, as well as in the clinical ward, must look to the bacteriological laboratory for guidance, in the same way that the navigating officer on the bridge directs the ship, under the tutelage of the astronomical observatory, across the trackless ocean.

REMARKS ON ATYPICAL EXOPHTHALMIC GOÎTRE.*

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THE recognition of a well-established case of Graves's disease is one of the easiest tasks of a medical practitioner. The classical signs, with which we are all familiar, leave no room for doubt as to its nature. The chief of these are: Rapidity of heart beat, protrusion of the eyeballs, enlargement of the thyroid gland, tremor, sweating, flushing, sleeplessness, and other evidences of nervous excitement.

Functions of the Thyroid Gland.

It has been established both by clinical and experimental evidence that the thyroid secretion is necessary for the proper development of the bony structures and their maintenance, and also for the due development of mental power, for the growth and maintenance of fatty tissue, skin, hair, and nails. The sexual functions are stimulated by thyroid secretion. In myxoedema, where the secretion is deficient, amenorrhoea is the rule, while excessive menstruation is usual in the contrary condition of exophthalmic goitre. In pregnancy also the symptoms of Graves's disease, if previously present, become accentuated. A notable result of excessive thyroid action is stimulation of the sympathetic system, and it is from this action that many of the classical symptoms arise, and in particular irritability of the vasomotor system. This was well exemplified in cases No. 7 and 15, where a patch of hyperaemia, lasting for a considerable time, resulted from the slightest stimulation of the skin. In a lesser degree it was noticed in

* Delivered at a meeting of the Ulster Branch of the British Medical Association.

several of the other cases. Another effect of excessive thyroid secretion is diarrhoea. The thyroid gland exerts an inhibiting influence on the pancreas; hence diabetes, the result of pancreatic inefficiency, is a not uncommon consequence of exophthalmic goitre. Thyroid secretion increases the activity of nitrogenous metabolism and opposes the accumulation of fat, with the result that emaciation is usual in well-marked exophthalmic goitre, and may also be seen in many of the imperfectly developed cases. The thyroid gland is unique in containing a noteworthy amount of iodine, and it is found that the administration of iodine or its salts increases the activity of the gland, and may in susceptible subjects even produce some of the symptoms of exophthalmic goitre.

Etiology and Symptoms of Exophthalmic Goitre.

It is the difficulty in accounting for the alteration in the quantity or quality of the thyroid secretion that gives rise to the differences of opinion as to the cause of exophthalmic goitre. The simplest way to increase the quantity of the internal secretion in the blood is to administer the extract of the gland by the mouth. By this means the symptoms of excessive thyroid action, or "hyperthyroidism," may readily be produced. Inflammatory or degenerative changes of the thyroid gland may cause it to enlarge, sometimes with excess of function, more frequently the reverse. Emotions, particularly fear, are credited with being a cause of exophthalmic goitre. In this connexion it is noteworthy that the symptoms closely resemble a state of terror. Here the excessive activity of the gland may be produced by direct stimulation. It has been shown by Crile that the more powerful emotions have a definite influence on the functions of the body, either by stimulation or by inhibition of various glands. Breuer suggests that the emotion of fear producing vasomotor changes causes the gland to empty itself quickly into the circulation with subsequent compensatory activity, and perhaps hypertrophy. In another group of cases the thyroid is unequal to the task of supplying the amount of internal secretion required by the organism, and in order to overcome this deficiency the gland becomes hypertrophied with, in many cases, hyperthyroidism. It is in this class of case that the administration of thyroid extract by the mouth has been advised, on the assumption that the assistance of the swallowed extract would do away with the necessity for compensatory hypertrophy of the gland. (See case No. 9.)

Cases of exophthalmic goitre in which the majority of the classical signs are absent are apt to be overlooked, and I have no doubt we miss many that should be identified. In hospital practice I have not succeeded in observing more than a few of this class of case, but that, perhaps, is to some extent explained by the fact that such imperfectly developed cases are not usually sufficiently ill to be admitted to the wards of a hospital; no doubt, also, many have escaped my attention. In private practice we are more likely to come across such cases, and my experience only extends to twenty-one instances, to which I wish briefly to direct your attention. I have, of course, excluded the more common fully developed cases of Graves's disease.

The cases are too few to permit any reliable generalizations to be founded on them; but it will be observed that in all the heart-rate was above normal, and in practically all the patient was aware of the rapid beating, either in the form of general throbbing of the arteries or as palpitation of the heart. This is the symptom which should always arouse suspicion, and when combined with tremor and with even a slight protrusion of the eyeballs it may be accepted as an evidence of hyperthyroidism. This last-named sign was, however, absent in 15 of my 21 cases. Careful examination will generally reveal an increase in the size of the thyroid—sometimes only to a very slight degree. In 3 cases it was normal, in 5 it was of moderate size, in 2 considerable enlargement existed, and in 11 there was slight enlargement. Tremor was absent in 9 of the cases. Twelve of the cases were between the ages of puberty and 30, and the remainder were between 30 and 60. All but three were females, and one of the three men, while incomplete in the development of signs when first seen, soon progressed rapidly in an unfavourable course, and became a typical case in a very short time. Two of the cases, as already mentioned, showed marked vasomotor excitability.

No.	Sex.	Age.	Residence and Medical Attendant.	When First Seen.	Pulse-rate.	Exophthalmos.	Tremor.	Thyroid Gland.
1	F.	39	Belfast	4/3/02	140	0	0	+*a*
2	F.	21	Co. Down	11/10/05	110	0	*a*	+*a*
3	F.	26	Co. Antrim (Dr. Reid)	11/5/06	120	0	0	+*a*
4	F.	34	Somerset	4/6/06	110	0	*a*	N.
5	F.	54	Co. Down (Dr. Knight)	26/8/07	120	0	*b*	+*b*
6	F.	60	Co. Armagh (Dr. Donnan)	10/12/07	120	0		+*c*
7	F.	22	Co. Cork	1/6/09	116	?	*a*	+*a*
8	F.	25	Belfast	3/6/09	110	0	0	N.
9	F.	13	Belfast	10/6/09	110	0	0	+*a*
10	F.	47	Co. Down (Dr. Knight)	8/9/09	125	*a*	*a*	+*b*
11	M.	36	Co. Down (Dr. Knight)	2/2/10	115-130	*a*	*a*	+*a*
12	M.	24	Belfast	25/5/10	Fast	0	*a*	+*a*
13	M.	23	Co Down	3/10/10	116	*a*	0	N.
14	F.	28	Belfast (Dr. M. Henry)	28/1/11	130	?	*a*	?
15	F.	32	Co. Antrim	6/2/11	126	0	0	+*b*
16	F.	24	Co. Monaghan	8/2/11	98	*a*	*a*	+*a*
17	F.	45	Co. Down	29/3/11	110	0	0	+*b*
18	F.	25	Co. Antrim	7/11/11	72-100	0	0	+*b*
19	F.	24	Co. Sligo (Drs. Quin and Craig)	18/12/11	130	*b*	*a*	+*a*
20	F.	18	Co. Antrim (Dr. MacWilliam)	17/5/12	98	0	0	+*c*
21	F.	34	Co. Tyrone (Dr. Condy)	28/8/12	120	?	*a*	+*a*?
22	F.	44	Co. Down	18/10/12	115	0	*a*	N.
23	F.	50	Co. Down	18/10/12	120	0	*a*	N.

NOTE.—N=Normal. 0=*Nil*. *a*=Very slight. *b*=Moderate. *c*=Considerable. +=Enlargement. ?=Doubtful. *=One eye.

Case 9 was an example of hyperthyroidism in a developing female at the age of puberty. The thyroid gland was slightly enlarged, and headaches, palpitation, flushing, and nervousness were present. These symptoms and the enlargement of the thyroid had only very recently attracted attention, and it seemed probable that the gland had become hypertrophied at puberty in the endeavour to meet the new demands upon its secretion caused by sexual development. Small doses of thyroid extract were therefore administered by the mouth, so as to assist the gland in its work, with the result that the hypertrophy disappeared and the patient got quite well after one or two relapses.

One of the most erratic of the cases is No. 18, in which there is apparently an alternating condition of hypo- and hyper-thyroidism. The prevailing symptoms are perhaps those of deficient rather than excessive thyroid secretion. She is inclined to grow stout, is somewhat phlegmatic in manner and character, sleeps well at night and is often drowsy during the day; her hair falls out freely on brushing it, and her thyroid gland is distinctly enlarged—indications of a mild degree of myxoedema. She first came for medical advice on account of a hard, harsh cough, caused probably by the mechanical irritation and pressure of the gland. Her pulse ordinarily is about 70. After a short course of small doses of thyroid extract, the contrary condition of hyperthyroidism appeared, and when the extract was stopped the tachycardia, palpitation, flushing, etc., continued for a considerable time. There still remains a mixture of symptoms indicating an inefficient thyroid, while her functions are very sensitive to the help obtained by the thyroid extract given by the mouth.

Case 19 was of interest owing to the fact that only one eye projected; the other symptoms of exophthalmic goitre were typical. The patient's sister, however, told me that six months previously both eyes were equally projecting in about the same degree as the one eye then was.

The last two cases are inserted in order to draw attention to a large group of cases, many of which are probably examples of hyperthyroidism. These are generally, and

no doubt correctly, described as functional disturbance due to the menopause. It must be remembered that many cases of true exophthalmic goitre begin about this time of life. We know also how intimate is the relation between the sexual functions and the thyroid gland. It therefore seems probable that the ordinary menopause symptoms, which so closely resemble those of hyperthyroidism, are largely the result of temporary hyperthyroidism.

Treatment.

As regards the treatment of these atypical cases, it differs in no material respect from that of the fully developed disease. I do not propose to occupy your time with this aspect of the subject, but I should like to ask the members to give a trial to the *x*-ray treatment. This procedure seems to offer a fair prospect of reducing the activity of the gland, without having to subject the patient to the risk of an operation for the purpose of removing a portion of the gland or ligaturing some of its vessels.

Finally, I would suggest that the name "exophthalmic goitre" be as far as possible discarded, and that the condition be spoken and thought of as "hyperthyroidism." This term would include all degrees of the abnormal condition, while the more usual description, "exophthalmic goitre," merely suggests two of the chief, but by no means the most constant, symptoms.

THE PORTALS OF ENTRY OF THE TUBERCLE BACILLUS, ESPECIALLY IN CHILDHOOD.*

BY

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An enormous amount of work has been undertaken during recent years with regard to the tubercle bacillus, but certain landmarks stand out prominently. These are, first, the differences which distinguish the human from the bovine variety of the tubercle bacillus, and, secondly, the extended use of von Pirquet's reaction.

There exist portals of entry of the tubercle bacillus that have long been recognized. For example, no one denies the transmission into the lungs of tubercle bacilli suspended in air in minute particles of moisture or in dust. Recent experimental evidence has amply demonstrated this very important avenue of infection, and has incidentally shown that the number of bacilli required, all things being equal, to set up pulmonary tuberculosis is relatively small as compared with the number necessary to induce tuberculosis elsewhere—as, for example, into the intestinal tract (1, 2).† No one questions transmission through the intestinal tract, especially in infancy, and here, again, experimental evidence shows that not only may the bacillus induce a lesion in the gut, but may enter the intestinal wall without producing a lesion at the seat of entry (3, 4, 5, 6). No one, again, questions transmission through the naso-pharynx; there is ample evidence, both clinical and experimental. Transmission can occur also through the skin, as was demonstrated in the case of a former colleague of mine, who contracted, presumably in the *post-mortem* room, a tuberculous lesion on his hand (see also 7). Experimentally, transmission through the unbroken skin has been demonstrated (8). Lastly, we reach the antenatal avenue of entry. Omitting for the present this last portal of entry, we may say, with Calmette (9), that "the more frequent channels of invasion are the mucous membranes of the natural cavities of the body, particularly the digestive and pulmonary epithelium, and to these may be added the naso-pharynx." Whether we can go further with him and say, "Of these the digestive path is the one most commonly chosen," is open to question.

Few observations have been so startling, or have had a more profound bearing on the problem of tuberculosis than the extended application of von Pirquet's reaction. Numerous statistics are now available, and Calmette (10), reviewing them, shows that, up to the age of 1 year, 9 per cent. of all children give positive results, up to the age of 2 years 22 per cent., from 2 to 5 years 53 per cent., and from 5 to 15 years 80 per cent. This reaction, which indicates tuberculous infection, has been controlled by statistics obtained from *post-mortem* records, and Binswanger (11) adduces a remarkable agreement between the two sets of figures (see also 12, 13). The reaction is carried out by the use of Koch's old tuberculin. The one forearm is scarified and a few drops of undiluted tuberculin introduced, as in vaccination, the other forearm being inoculated with normal saline in order to act as a control. The development in the course of some days of an inflammatory reaction is acknowledged to indicate the presence of tuberculous sensitiveness—that is, that the person so reacting has circulating in his blood serum certain specific antibodies to the tubercle bacillus—antibodies present owing to an infection, recent or remote, active or quiescent, by the tubercle bacillus. The reaction partakes of the character of anaphylaxis (14), inasmuch as the local inflammation is the result of poisonous products resulting from the disintegration of the introduced tuberculin, which has been acted upon by the two elements in the patient's serum, complement and antibody. There appears to be no specificity regarding the use of human and bovine tuberculin (15), and there does not appear to be any agreement between the intensity of the reaction and the extent of the tuberculous lesion (16, 17),‡ though the reaction tends to become feeble or absent in severe cases, probably due to the using up of antibodies and complement. It is not my purpose to discuss the subcutaneous (18) injection of tuberculin for diagnostic purposes, or to enter into the evidence so afforded of focal as well as local reaction (19), as full comparative statistics are not yet available.

Does this relative absence of von Pirquet's reaction, then, mean that infants possess a greater insusceptibility to tuberculosis, even when, as above, substantiated by *post-mortem* findings? Two points have to be taken into account in meeting this observation: First, that in children, and especially infants, antibodies are deficient (20), or, at any rate, their non-detection would seem to warrant such a statement; and, secondly, in the *post-mortem* room it is unquestionable that the disease may not be recognized macroscopically as the tubercle is often in the prefollicular stage (21, 22). I would ask especial attention to these explanations of the non-detection of tuberculous infection in infancy, as I shall refer to them later when dealing with the antenatal transmission of the infection.

The full significance of the extended application of von Pirquet's reaction has been held to justify von Behring's (23, 24) pronouncement in 1903:

> The seeds of phthisis are laid in infancy through the intestinal mucosa, remaining latent until the powers of resistance happen to become impaired; the disease then becomes active. The tubercle bacilli are usually introduced in cow's milk and absorbed through the intestine.

No doubt von Behring has felt justified in his prophetic utterance by the statistics of von Pirquet (25), Hamburger (26), and a host of other observers (27, 28, 29), which would seem, at first sight, so eminently to substantiate his pronouncement.

But there exists a most important stumbling-block to the full acceptance of von Behring's theory, even though supported by the advocacy of Calmette and his school. It is the placing upon a scientific basis the grounds for distinguishing between two varieties of the tubercle bacillus, the human and the bovine (30, 10). Briefly, they consist, first, in the constant inoculation differences—that is, the rabbit succumbs to a progressive generalized tuberculosis in four to five weeks' time after inoculation with the bovine strain, but exhibits retrogressive lesions with the human strain; and, secondly, in the inconstant, but occasionally useful, cultural differences, as evinced by the comparatively easy and luxuriant growth of the human variety. The allusion in the report of the Royal Commission to peculiar quasi-intermediate forms occurring in lupus and in tuberculosis of the horse (see also 31), while they give us to pause in being too insistent on the distinctions which serve to separate the human from the bovine variety, cannot, I think, in the face of the very many unsuccessful experimental attempts to convert the one variety of bacillus into the other (32, 33, 8), completely

* A paper read before the Cardiff Medical Society.

† The figures in parentheses refer to the bibliography at end of paper.

‡ Morland (*Lancet*, 1912, ii, p. 688) suggests the contrary.

shake our belief in the separate identity of the two varieties.

In the first place, assuming these differences do exist (34), I agree with Cobbett (3) when he says that "von Behring's theory as to the causation of phthisis, so far as it relates to infection by cow's milk, cannot be accepted," on the ground that, with remarkably few exceptions, the bacillus isolated in phthisis belongs to the human variety. Calmette (10), at the International Tuberculosis Congress held last year in Rome, stated that, over the age of 16 years, 98.09 per cent. of all fatal cases of tuberculosis were due to the human tubercle bacillus (see also 35); since, over the age of 16 years, the vast majority of deaths from tuberculosis result from phthisis, it follows that the human variety accounts for practically all the cases of phthisis (36), and not the bovine variety, as von Behring's statement would imply.

In the second place, assuming the "seeds of phthisis were laid in infancy by the drinking of cow's milk," in the face of these statistics there would have to be postulated a mutation of bovine into human tubercle bacilli, and this, in our present state of knowledge, we cannot accept. Statistics culled from all sources agree in assigning to the bovine variety of the tubercle bacillus varying percentages of cases of tuberculosis under the age of 16. Calmette (10) gives 26.5 per cent. up to the age of 5 years, and from 5 to 16 years a percentage of 25. At the same time it cannot be questioned but that considerable divergences in percentages may be obtained (34). Presumably the source of infection is cow's milk, which, in its turn, is infected chiefly through tuberculosis of the udder, though the bacilli have been shown to be present in the milk of tuberculous cows in the absence of actual affection of the udder itself, either directly or indirectly, by reason of the contamination of the milk by the cow's tubercle-laden faeces (37). Incidentally, this country has a long way to go before it attains to the measure of freedom of its dairy cattle from tuberculosis such as obtains in Denmark. Chiefly through the instrumentality of Professor Bang of Copenhagen, legal statutes enact the separation of herds, by means of the tuberculin test, into two separate divisions, followed by the gradual elimination of reacting animals. The success following these measures has been remarkable, and affords an example of how the problem of infected milk is best attacked.

Surely if the intestinal mucosa is the chief portal of entry, and cow's milk the chief source of the tubercle bacillus, we would reasonably expect to find a very much higher percentage of cases due to bovine infection. As a matter of fact you will note that even under the age of 5 years (see also 36), nearly three-quarters of the cases of tuberculosis are traceable to infection from a human source.

We have travelled far since Koch (38) startled the scientific world by declaring that infection in the human was wholly, or practically so, due to the human variety of the tubercle bacillus, but I think some of us must retrace our steps from having advanced too far in the opposite direction.

The broad facts are these: that whereas bovine infection does occur in infancy and childhood to the extent of 25 per cent., the remaining 75 per cent. of the cases, and practically the whole of the cases after the age of 16 years, are due to the human bacillus.

Ritter and Vehling (39) have found that cases of tuberculosis, where the disease was recognized in childhood, or where, owing to infected relations, infection was more than probable, would appear to run a milder course, and be more amenable to sanatorium treatment, than cases where the disease was not recognized in childhood and where the relations were not infected (see also 40). In support of their contention that previous infection renders the disease less virulent they adduce evidence from Turkey to show that, in districts where the disease is almost unknown, tuberculosis, when it does occur, runs a very rapid course. While, as a corollary, they affirm that the ordinary healthy adult, in this and other countries similarly situated as regards the disease, possesses a more or less complete immunity (see also 41).

This opens up several important questions. It suggests that if immunity can be so produced (42) how much better it would be to produce it artificially, as proposed by Calmette (43), than to run the grave risks attending infection by the usual method. It suggests that persons infected with tubercle bacilli in early life are capable of dealing with fresh infections without difficulty. It suggests that bovine infection in childhood may possess an immunizing effect in later life, and that infection by tubercle bacilli in milk, provided they are not present in too great numbers, may have that desired effect. It suggests that where previous infection can be excluded, the disease runs a course very different from that run where previous infection cannot be excluded. It suggests that miliary tuberculosis, if not due to an overwhelming infection of tubercle bacilli, is due to infection on virgin soil, and that the more common cavernous tuberculosis is to be regarded as a phenomenon of a certain degree of immunity.

How are we, then, to account for the undoubted high percentage of infection—a percentage which I gave reasons for supposing to be very much higher than is generally conceded—in infants? In other words, what are the portals of entry of the human variety of the tubercle bacillus in infancy?

On the one hand, it cannot be denied that, where one or both parents are phthisical, or where the infant comes into direct contact with persons suffering from phthisis, the chances of infection, both by way of the respiratory system and the alimentary tract, are considerable, and no doubt infection does certainly occur in this manner (44). It is also reasonable to suppose that, where the infective material is abundant, where the dose, in other words, is high, the infant should develop tuberculosis of the miliary type, especially if the predisposing factors are in evidence, and the natural forces of defence weakened (45).

On the other hand, the possibility of the transmission of tubercle bacilli through the placenta must not be altogether disregarded, as would almost appear to be the case at the present time. With the exception of Baumgarten (46), who, it seems, has held the view of antenatal infection for some years, observers in general assign but very little importance to this portal of entry. Schmorl (47) goes even so far as to say that, unless the placenta is definitely diseased, infection by this channel is impossible. One of the strongest arguments used by those opposed to placental transmission is the extreme rarity of congenital tuberculosis (9, 48, 49). It is undoubtedly rare, and, when it does occur, exhibits generalized characters (49). But because congenital tuberculosis is rare, or rather because generalized tuberculosis occurring before or immediately after birth is rare, is, to my mind, no argument against the transmission, in very many instances, of the tubercle bacillus by way of the placental circulation.

In the first place, when we take into consideration the enormous proportion of our population who are definitely tuberculized, well over 90 per cent. (43), and whose systems are constantly being infected with the tubercle bacillus; when we realize that pregnancy, with its stress and debilitating effects, renders the organism less ready to cope with and destroy the infections as they occur (33), we will not be surprised if, in the circulating blood of the mother (50, 51, 13), there may exist tubercle bacilli in far greater numbers than are to be found under normal conditions.

In the second place, when we understand that it has been shown that the normal mucous membrane of the intestine may constitute a portal of entry of the tubercle bacillus and leave no sign by which one can recognize its penetration (see also 52), it is difficult for us to believe that the cells of the chorionic villi, though they be endowed with properties not yet thoroughly understood (53), can prevent the passage of such an extremely resistant body as the tubercle bacillus into the fetal circulation.

Lastly, when we surmise that the bacilli thus introduced into the fetus may, after all, be relatively few in number; that the lesions they produce may be prefollicular and eventually retrogressive; that, as we have before noted, von Pirquet's reaction may yet be absent, it will be very difficult for us to deny the possibility, or even the strong probability, that such manner of infection does occur, that antenatal infection constitutes a portal of entry of the tubercle bacillus.

To sum up, then: the portals of entry of the tubercle bacillus, especially in childhood, include the respiratory system, the alimentary tract, the mucous membrane of the naso-pharynx, the skin, and, lastly, the placenta.

The significance of these many portals is evidenced in the practical tuberculization of the community (48), and is of interest in the detection of the source of infection, both human and bovine.

The questions that yet remain to be solved concern the latency of the infection contracted in childhood. Where do the bacilli live? Do they live in the tuberculous glands and old lesions so frequently found *post mortem*? Do they there remain quiescent for indefinite periods, capable, when the time comes, of setting up disease, as exemplified in the recent attention drawn to pulmonary tuberculosis resulting from extension from tuberculous bronchial glands (54, 55)? If so, how are we to account for the negative results obtained by Cobbett (3) after inoculating animals with the tuberculous tissues? Do the bacilli live in the blood and tissues generally (50, 51, 13), having established a *modus vivendi*, wherein they are tolerated but not allowed to multiply to any extent? This may be so, and thus the vast majority of the people in this country are in reality tubercle carriers, awaiting some impairment of the powers of resistance—to quote von Behring—in order to become obvious sufferers from tuberculosis.

Much might be said regarding the view that the first infection in childhood, by conferring a partial immunity, determines that, in the largest proportion of cases in adult life when tuberculosis does supervene, the disease shall run its most chronic form with cavity formation in the lungs (55, 56), and not the acute miliary form.

From what has been already brought forward it will be seen that, although the problems that tuberculosis still offers for solution are of far-reaching consequence, still the recognition of the portals of entry and the source of the infection places us in a stronger position than formerly, and enables us to say, in the words of the resolution adopted at last year's International Congress, "Prophylaxis of tuberculosis must principally be directed towards the suppression of contamination from man to man, and principally in the family, and, whilst contamination of man by bovine infection is of less frequency, it is, nevertheless, necessary to maintain all measures against infection from this source."

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THE VARIETIES OF TUBERCULIN IN THE TREATMENT OF TUBERCULOSIS.

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In the paper which I published in the British Medical Journal in 1903 I ventured to suggest that a considerable amount of tuberculosis in children was caused by the bovine tubercle bacillus. Since that time a great amount of scientific investigation has been carried out over the whole world, and especially by our own Royal Commission, with the result that we are now certain of the following conclusions:

1. That the great mass of tuberculosis occurring in the human subject in the form of pulmonary tuberculosis is caused by the human bacillus (*Typus humanus*), and is conveyed from person to person by infection.
2. That a considerable amount of so-called surgical tuberculosis in children and adults is caused by the bovine bacillus (*Typus bovinus*), received into the alimentary canal through milk and food.

Originally of a common species, the bacilli have, owing to long environment in different hosts, assumed marked characteristics, so that we are able, experimentally, to divide them into two types:

1. *Bacilli of the Typus humanus*, which cause:
   - (*a*) Pulmonary tuberculosis and pleurisy.
   - (*b*) Secondary tuberculous enteritis.
   - (*c*) Tuberculous laryngitis.
   - (*d*) Fistula in ano and possibly some other lesions.
2. *Bacilli of the Typus bovinus*, which cause:
   - (*a*) Primary abdominal tuberculosis.
   - (*b*) Tuberculous lymph glands.
   - (*c*) Bones and joints (probably).
   - (*d*) Genito-urinary tuberculosis.
   - (*e*) Acute miliary tuberculosis.
   - (*f*) Lupus. Meningitis.
   - (*g*) Pulmonary tuberculosis (a small percentage).

I have for the last ten years separated my wards in hospital into human and bovine wards, and after an observation of over 6,000 cases of tuberculosis, I am impressed with the fact that it is rare to see lesions of the human and bovine type associated in the same patient. In fact they seem to be antagonistic to each other, so that one rarely observes a patient suffering from pulmonary tuberculosis develop any other lesions beyond those mentioned in the human group. It is also rare for cases of gland or bone tuberculosis to develop true pulmonary tuberculosis except in the course of a general systemic infection.

It is necessary to mention this clinical fact to explain my reason for using tuberculins of the opposite strain in the treatment of the disease. There seems to be little doubt that a mild infection by bovine bacilli in the human body, such as neck glands, by way of the alimentary canal, will protect against an infection by human bacilli, and it is most probable that a large number of people are immunized against pulmonary tuberculosis in after-life by having been infected in early childhood by bovine bacilli through milk or food. In all the experimental work throughout the world it has been found to be a rare occurrence to find both types of bacilli in the same body.

Variations in Virulence.

Whether or not a patient is going to be destroyed by tuberculosis seems to me to depend on two important factors: (1) Virulence of infection; (2) individual resistance.

The variability in virulence of the tubercle bacillus is

well recognized. In many cases, fortunately, the infection shows little tendency to progress in the body, so that we constantly see in practice patients who have suffered from tuberculosis for twenty or thirty years. In other cases the infection is virulent and rapid, and kills the patient in two or three weeks.

In the former cases the bacilli are of low virulence, in the latter they are highly virulent, giving the body no chance to offer any resistance to the attack.

Treatment by Tuberculin.

It is in the avirulent bacillary infections that tuberculin is of such great service, and I have found it of little or no value in acute virulent infections.

The whole object of treatment by tuberculin is to produce an immunity in the blood against infection by tubercle bacilli; and, what is even more important, to prevent the further spread of the bacillary infection in the tissues. Whether or not it is possible to ever produce a complete lifelong immunity against tubercle is a matter of doubt.

As a result of my experience I have found that the lesions in the body which are caused by the *Typus humanus* are benefited more quickly and certainly if a tuberculin prepared from the opposite strain—namely, bovine tuberculin—is used; and in all cases of pulmonary tuberculosis I now only use bovine tuberculin. It is less toxic, and does not so readily cause reaction, is more easily tolerated, and causes the bacilli to disappear from the sputum more quickly. For the lesions caused by the *Typus bovinus*—namely, lymph glands, tuberculous peritonitis, lupus, tuberculous disease of the bladder, bones, and joints—I invariably use Koch's old tuberculin prepared from human cultures.

The question of dosage is of vital importance, and my routine practice is to administer a course of tuberculin in twelve weekly injections, then resting for a month, and, if necessary, repeating the maximum injection every week. My dosage is as follows of either human or bovine tuberculin:

0.0001 mg.	0.0006 mg.	0.006 mg.
0.0002 ,,	0.0008 ,,	0.0075 ,,
0.0004 ,,	0.001 ,,	0.008 ,,
0.0005 ,,	0.004 ,,	0.01 ,,

A special watch must be kept on the temperature, pulse, and blood.

It is rare to observe a general reaction if the above dosage is carefully followed.

In a great many cases the tubercle bacilli disappear entirely from the sputum at the end of a course of injections, but, unfortunately, if the tuberculin is not persisted in they in many instances speedily return—so that in some cases of pulmonary tuberculosis the injections should be continued for an indefinite time.

Whilst tuberculin *per se* cannot be expected to heal cavities in the lung or replace damaged tissues, yet it undoubtedly has the power of preventing the spread of the tubercle to healthy parts by means of its immunizing effects. Time is thus given for repair of the affected tissues.

In conclusion, I would like to express my opinion, after treating over 600 patients with injections of tuberculin, that it is a remedy of the greatest value, especially in early cases and where the deposit of tubercle is localized, as in one apex or in a lymph gland or single joint; but where the tuberculosis is disseminated and complicated by secondary infections the use of tuberculin cannot be expected to be of much avail. It ought, however, to be tried in every case with the hope of some relief or possible benefit, as we cannot allow the patient to suffer and die without making every effort to arrest the progress of the disease.

Tuberculin is not going to revolutionize the treatment of tuberculosis. It is a valuable aid to the other methods of treatment, hence it must be used with care and discrimination and with a full knowledge of its dosage and therapeutic effects.

I would conclude by saying that the best treatment we can offer to-day to a person infected with tuberculosis is a prolonged open-air life, preferably in a well-conducted sanatorium, excess of nutritious food, gentle exercise followed by plenty of rest, and a course of tuberculin by a careful physician.

ON THE "CONTROLLED" THERAPEUTIC USE OF NEW TUBERCULIN IN THE TREATMENT OF PULMONARY TUBERCULOSIS.

BY

E. E. A. T. RIGG, M.B., B.S.LOND., ETC.,

LATE HOUSE-PHYSICIAN TO THE BROMPTON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST.

Introductory Remarks.

THE success claimed for various tuberculins used in various methods in the treatment of pulmonary tuberculosis has been considerably discounted by the fact that many do very well on ordinary hospital or sanatorium treatment or even at home at work, without tuberculin, and this discount is emphasized by the fact that the advocates of the use of tuberculin (or at any rate some of them) say that only such cases of pulmonary tuberculosis as are afebrile and up and about are fit subjects for the treatment.

With these considerations in mind, Dr. Batty Shaw (upon whose patients and at whose instigation these investigations were carried out) suggested that I should carry out observations on the comparison of afebrile cases of pulmonary tuberculosis treated for three months, half with tuberculin and half without, the cases being compared at the beginning and end of this period. The plan of *controlling* the therapeutic use of tuberculin in the way described in this paper is entirely due to Mr. W. Palin Elderton, F.I.A.

Criteria.

The question arose as to what criteria should be used in estimating the improvement or the reverse of the cases after their course of treatment.

1. *General Condition.*—This, as judged by the patient's own feelings and the observations of the medical attendant, was self-evidently too fallacious to place stress upon, as a patient quite often says he or she is better when the temperature has risen or the physical signs show extension of the disease in the chest. This therefore was relegated to a secondary place.

2. *Increase of Weight.*—This also was evidently fallacious, as it might easily coexist with extension of disease and not be present, or to a much less extent, in a case which was in all other respects much improved.

3. *Functional Capability.*—An attempt is made to estimate this partly at the Brompton Hospital by registering the number of miles per diem a patient walks, but this also self-evidently will vary with the natural constitution and habits of the patient.

4. *Occurrence or Non-occurrence of Relapses.*—In a period of three months this could not well be judged of, and the occurrence of temperature, if maintained for more than a day or two, was considered as disqualifying the patient from the conditions of the experiment. No reliance was placed upon the disappearance of tubercle bacilli from the sputum as a sign of improvement, for the extrusion of phlegm is so obviously under the control of the patient, and temporary absence of tubercle bacilli in the sputum of patients suffering from active pulmonary tuberculosis is not infrequent.

5. *Physical Signs.*—The only criterion that remained, therefore, was alteration in the physical signs—that is, whether there was extension or retrogression of them during the three months—and of these the greatest attention was paid to râles as being the most definite indication of the extent of disease which could easily be demonstrated to another observer. Therefore, at admission, the râles were estimated and diagrammatized to the actual intercostal spaces and parts of intercostal spaces (outer and inner ends) in which they were heard. This was done for the front and back of both lungs. These observations were made independently by Dr. Batty Shaw and by myself, and in nearly every case substantial agreement was arrived at. At the end of three months, the cases were again examined by Dr. Batty Shaw (without examination in the interval, and, as far as possible, without his knowing whether the patient had been treated with tuberculin or not). The examination was carried out in the same way, râles being diagrammatized to the space without reference to the first diagram, and then the two diagrams compared. The cases were examined independently by

me, and I made separate diagrams which were afterwards compared with those of Dr. Batty Shaw. Out of 19 cases there was substantial agreement in 17 cases, and minor differences in 2, which were afterwards adjusted. In some cases the extent of râles had increased, in some retrogressed, and in others remained stationary, while in still others there had been increase of râles in one lung and diminution in another. In such cases a balance had to be struck between the two, and the case adjudged as worse, stationary, or better accordingly.

Physical signs were, therefore, taken as the main criterion, and alteration and increase of weight, amount of exercise, and general condition correlated secondarily.

Choice of Cases.

In agreement with one of the safest recognized methods of giving tuberculin, it was adopted as a *sine quâ non* that all the cases should be afebrile when up and about all day, and that rise of temperature maintained for more than a day or two should disqualify the patient from being one of the series.

Another point now cropped up, which was that many cases are adjudged suffering from pulmonary tuberculosis on slight and often equivocal signs at one apex, or on no signs at all, and on some haemoptysis which may very possibly have not been haemoptysis at all, but have been concealed epistaxis or bleeding from gums, teeth, or posterior naso-pharynx. Therefore, as the second *sine quâ non* it was resolved to take only those patients into the scheme who had expectorated sputum in which tubercle bacilli had been found.

The third point was the distribution of the cases between the two methods of treatment, and where a number of cases presented all grades of involvement of the lungs from very slight to extensive (1 apex to 5 lobes), and where some showed fibrosis and some not, it would be almost impossible to apportion the cases fairly between the two treatments so as to be free from any suspicion of bias. To obviate this, the patients were chosen by lot. In this way two series of nine were chosen, but, because of rise of temperature or because they left the hospital, three soon fell out from the names not treated by tuberculin. To replenish these, the next four patients fulfilling the conditions of afebrile tuberculosis drew lots, one to have tuberculin treatment, and three not. The final result was that ten patients were treated with new tuberculin (T.R.) and nine were not, the one out of the latter ten cases being set aside, as she left the hospital before the expiration of three months.

Method of Giving Tuberculin (T.R.).

As before mentioned, tuberculin was only given to afebrile cases.

Dosage.—Treatment was commenced with a very small dose, increased every second day at first, and afterwards at intervals of four days.

General Scheme.—The dose given was as follows in milligrams every second day: 0.00001, 0.00003, 0.00005, 0.00007, 0.0001, 0.00015, 0.0002, 0.0003, 0.0005, 0.0007, 0.001, 0.0015, 0.002, 0.003, 0.005, 0.007, 0.01, 0.015, 0.02, 0.03, 0.05, 0.07, 0.1.

Every Fourth Day.—0.15, 0.2, 0.3, 0.5, 0.7. The last—0.7 mg.—was the maximum dose reached.

The injection, however, was conditioned by the occurrence of reactions. If the temperature rose to 99° F. or above with all but the smallest doses (where the temperature was possibly not due to the injection of tuberculin) the patient was put to bed until it became normal, and no further dose was given for five to ten days (five with small doses and up to ten with the larger), and then the last dose repeated. In the case of the smallest doses, the next dose was given after an interval of four or five days. If the temperature now remained normal, the original increase of dosage was gone on with. If another reaction occurred, the patient was again put to bed till the temperature was normal, and when it had kept normal for from two to seven days, the same or a smaller dose was given. If this produced a reaction a still smaller dose was given after an appropriate interval until one was found which produced no response. This dose was now repeated two or three times before increasing again.

Out of 10 cases, 2 gave no reaction till 0.7 mg. was injected. A third case reacted first with 0.1 mg., whilst the other cases reacted two to seven times with various doses.

A Typical Example.

CASE V.

First dose=0.00001 mg. This produced a reaction temperature 100° F. After eight days' interval 0.00003 mg. was given, and at two days' interval, 0.00005, 0.00007, 0.0001, 0.00015, 0.0002, 0.0003, 0,0005, 0.0007, 0.001, 0.002, 0.003, 0.005, 0.007, 0.01, 0.015, and 0.02 mg. After this last the temperature rose to 99°; five days' interval, and then 0.02, 0.03, 0.05, 0.07, and 0.1 mg. were given at two days' interval, then at four days' interval, 0.15, 0.2, 0.3, 0.3, and 0.3 mg.

At the end of three months all the 19 cases were again examined in the way described and note also made of their weight and amount of exercise taken.

SUMMARY OF RESULTS.

1. *Physical Signs:*
   (*a*) Tuberculin-treated patients. Out of 10: Improved 1, worse 4, *in statu quo* 5.
   (*b*) Non-tuberculin-treated patients. Out of 9: Improved 4, worse 3, *in statu quo* 2.
2. *Increase of Weight:*
   (*a*) Tuberculinized patients (10 cases). Gained 10–20 lb. 4, gained less than 10 lb. 4, *in statu quo* 2.
   (*b*) Non-tuberculinized patients (9 cases). Gained over 20 lb. 2, gained 10–20 lb. 3, gained less than 10 lb. 4.
   In (*a*): Average per cent. of increase of weight, 6.3 per cent.
   In (*b*): Average per cent. of increase of weight, 10.3 per cent.
3. *Exercise*—capacity of walking, maximum amount per diem:
   (*a*) Tuberculin patients (10 cases). Two miles and over, 3; 1–2 miles, 5; less than 1 mile, 2.
   (*b*) Non-tuberculin patients (9 cases). Two miles and over, 6; 1–2 miles, 3; less than 1 mile, 0.
4. *General Condition.*—This is a difficult criterion, but, generally speaking, in (*a*) only 5 out of 10 were in thoroughly good condition; in (*b*) 8 out of 9 were in thoroughly good condition.

The net result of these observations is to show that the administration of new tuberculin by one of the more popular approved methods is not followed by greater improvement in the *physical signs*, nor by greater increase in weight, nor by more greatly increased capacity for physical work, nor by a greater improvement in the general condition, as compared with the results of ordinary hospital methods.

The observations on the signs do not support the idea that new tuberculin in any way lessens the activity of the local lesion. It is possible that the less favourable influence on weight, the less capacity for work, and the falling off of the general condition are due to the disabilities imposed on the patient by being treated with tuberculin, as they so often were kept in bed to help restore the temperature to normal.

ORGANIC ACID RATIO OF URINE AFTER TUBERCULIN.

BY ARTHUR H. GREGSON, M.B., B.CH.VICT.,
BLACKBURN.

A GIRL, born in 1892, had suffered from lupus vulgaris of the left cheek from 1895 to 1905. Roentgen rays were tried, but did not benefit. Curetting was successful in 1905, but afterwards the glands of the neck and beneath the jaw on both sides enlarged.

She consulted me, and on December 4th, 1909, received an injection of $\frac{1}{10000}$ mg. T.R. This was repeated weekly in increasing dose until, on February 1st, 1910, $\frac{1}{1000}$ mg. T.B.E. was given; after this the temperature rose to 103° F., the patient became delirious, and suffered from severe abdominal pain and tenderness. The temperature was intermittent for months; various methods were tried to reduce it, including administering on May 3rd and 22nd of $\frac{1}{10000}$ mg. T.R. of human origin, as before, but without benefit.

About the middle of July $\frac{1}{5000}$ mg. of bacillary emulsion of bovine origin was administered; the temperature fell to normal and pains decreased.

It seemed as though the failure were associated with the human origin and the success with the bovine origin, and it was determined to repeat the experience.

On August 2nd, 1910, the patient weighed 7 st. 8½ lb., and $\frac{1}{5000}$ mg. T.B.E. was administered. It was increased to $\frac{1}{2500}$ mg. on the 13th and to $\frac{1}{1000}$ mg. on August 23rd and September 1st, after which the temperature became erratic. The question of over-dosage had to be considered, but on September 6th the girl weighed 8 st., a gain at the rate of 1 lb. a week; the idea of the wrong variety of tuberculin was therefore adhered to, and $\frac{1}{3000}$ c.cm. original bovine tuberculin was administered on September 13th.

The temperature fell suddenly on the eighth day. Increasing doses were given on September 23rd, October 6th, October 19th, and reached $\frac{1}{3000}$ c.cm. concentrated bovine tuberculin on October 26th.

The patient felt considerably better, and it was determined to attempt an investigation into the acidity of the urine under the action of the different varieties. No constant effect was found upon the total free acidity, and this was then divided into the mineral and organic portions, and the following results obtained for the ratio of organic to total acidity:

Increased Organic Acidity after Human Tuberculin on January 4th.

Before.	Injection.	After.
0.26	$\frac{1}{2000}$ c.cm. T. Koch	1.04 (2 days); 2.2 (5 days); 2.5 (6 days).

Decreased Organic Acidity after Bovine Variety on January 17th, 26th, and February 6th.

Before.	Injection.	After.
1.7	$\frac{1}{1000}$ c.cm. P.T.	1.6 (3 days); 1.5 (6 days).
2.5	$\frac{1}{750}$ c.cm. P.T.	1.1 (5 days).
1.0	$\frac{1}{350}$ c.cm. P.T.	0.56 (2 days); 0.4 (9 days).

An injection of $\frac{1}{1500}$ c.cm. T.K. on December 19th had sent the temperature to 100°, but no rise was noticed after that on January 4th, whilst after the bovine tuberculin on February 26th the temperature rose again to 100°, so this is some evidence that the difference in result is not dependent upon the weaker nature of the bovine variety.

As the effect of only one "human" injection had been tested the following confirmatory observations were made, and the effect upon the lime, magnesium, and phosphorus noted at the same time:

E. H.

February 12.		Feb. 15.	Feb. 20.	Feb. 28.
	Injection $\frac{1}{500}$ c.cm. T.K.	Grams.	Grams.	Grams.
Lime in 24 hours ... ... 0.122 gram		0.288	0.378	0.254
Lime in 100 c.cm. ... ... 0.0135 ,,		0.026	0.031	0.026
Mg in 24 hours ... ... 0.536 ,,		0.277	0.708	0.431
Mg in 100 c.cm. ... ... 0.049 ,,		0.025	0.059	0.044
Ratio of organic to total acid ... 1.37		1.65	1.44	2.1
Ratio of phosphorus to total acid ... 0.2		1.2	0.7	0.5
Ratio of phosphorus to lime... ... 1.75		2.9	2.35	2.35

A. R.

		Oct. 27.	Nov. 1.
	Inject $\frac{1}{200}$ c.cm. T.K.	Grams.	Grams.
Lime in 24 hours ... ... 0.688 gram		0.790	0.292
Lime in 100 c.cm. ... ... 0.055 ,,		0.046	0.03
Mg in 24 hours... ... ... 0.979 ,,		0.884	—
Mg in 100 c.cm. ... ... 0.034 ,,		0.026	—
Ratio of organic to total acid ... 0.03		1.59	1.15
Ratio of phosphorus to total acid ... 0.02		0.3	0.26
Ratio of phosphorus to lime ... 1 1		0.8	1.5

These and four other experiments therefore confirm the increase of the organic acid ratio after administering human tuberculin, and show that it is not due to the lime and magnesium being reduced.

The methods used were as follows:

Total Acid.—Neutralization with decinormal NaOH after adding 1 per cent. neutral potassium oxalate, using phenolphthalein as indicator.

Ammonia.—After neutralization of 20 c.cm. as above, add 8 c.cm. freshly neutralized 40 per cent. formalin and continue the addition of decinormal NaOH.

Ethereal SO_4.—Difference between precipitation of urine by barium nitrate with and without previous oxidation by conc. HNO_3.

Mineral Acidity.—Add 5 c.cm. decinormal NaOH, ignite, oxidize, boil with excess of acid, neutralize, and estimate alkali lost. Deduct the ammonia and ethereal SO_4.

Organic Acidity=Total acidity−mineral acidity.

I have been unable to trace any similar experiment. If the prevailing opinion be correct, that there is no fundamental difference between the various tuberculins, we may as well settle the relative activities and cease to encumber ourselves with so many specimens. If incorrect, we ought to find their differences and discover the indications for each.

A YEAR'S EXPERIENCE OF DIORADIN IN SURGICAL TUBERCULOSIS.

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ALMOST a year ago I read a paper before this Section of the Academy, giving the results of treatment by dioradin of 15 cases of tuberculosis. Since then I have been more or less continuously engaged in the further treatment of these and other cases by the same means, and I desire to record the results I have obtained during fifteen months' trial of this remedy in cases of surgical tuberculosis, and the conclusions at which I have arrived as to the value of this method of treatment.

I shall first consider the cases which I reported a year ago; they were 15 in number, but to-night I shall only speak of 14 of these, as one of them was a case of pulmonary tuberculosis, and the number of this class of case has been too small to be worth recording the results at present. These 14 cases were divided into two classes according to whether they were complicated by sepsis or not.

Of the 5 uncomplicated cases each had received one course of injections, and one was apparently cured, and the other 4 were greatly improved, and they showed an average gain in weight of 8.3 lb. Four of these have since received a second course of injections, with the result that there are now 4 apparently cured, and 1 greatly improved, and the average gain in weight is 10.5 lb.

Of the 9 cases in the second class, that is, cases complicated by sepsis, there was 1 apparent cure, 2 greatly improved, 4 improved, and 2 not improved, with an average gain in weight of 2 lb. Four of these cases were given a second course of injections, and a fifth was given both a second and a third course, with the result that there were 3 more apparent cures and 1 greatly improved. The fifth, which was a case of tuberculous and septic hip which had been excised, improved further after a second course of injections, but about a month later developed acute nephritis and died. The average gain in weight of these 5 patients was 5.4 lb. As regards the other 4 of this group who did not receive a second course of injections, 1 was a case of multiple foci which left the hospital cured after the first course (No. v previous paper[1]). The second, a septic hip in which there was always much doubt as to the presence of tuberculous disease, left hospital unimproved after the first course of injections (No. VIII, previous paper). The third was a case of tuberculous cystitis with almost certainly a similar affection of both kidneys as well; he also left hospital unimproved after the one course of injections and died shortly afterwards (No. XII previous paper). And the fourth was a case

* Read before the Surgical Section of the Royal Academy of Medicine in Ireland, November 29th, 1912.

of lupus which left hospital improved after the first treatment; she reported since that the improvement continued, but she did not return for a second course (No. XIV previous paper). I shall now give a brief account of the treatment of a further series of 14 cases.

CASE XV.

T. E., male, aged 35, admitted January 20th, 1912, with tuberculous disease of left knee, started one and a half years before, had got rapidly worse in previous month. Bier's passive congestion was tried for a month after admission with no sign of improvement; left knee 2 to 3 centimetres larger than right, bulging spot with fluctuation on outside of joint, marked tenderness, increased local temperature; pain on movement, traction, or percussion of heel. Knee flexed to angle of 140°, movement of about 20° only. Put in plaster and given course of injections. Discharged April 11th, 1912. Pain relieved, and patient had put on flesh; unfortunately he had not been weighed before the injections were commenced. Readmitted July 25th; when the plaster was removed an abscess was found on point of bursting on outside of knee. This was opened and scraped on August 3rd; no direct entry into the joint could be found; a second course of injections was given from August 2nd to September 25th. The abscess closed rapidly, but a second formed lower down and was opened and scraped, September 14th; again no direct opening into the joint could be found; a third course of injections were given from October 9th to November 26th, when he was discharged with knee in plaster, both wounds soundly healed, the leg straight and painless, and the knee practically the same size as the other. His weight increased by 10¾ lb. during his second stay in hospital.

CASE XVI.

B. G., female, aged 9, admitted September 14th, 1911, complaining of limp on right side. Patient fell on right hip some months before. A month later there was some pain in the hip, which continued on and off till admission. On examination there was apparent lengthening, slight flexion and abduction, pain on percussion of heel, the movement at the joint was greatly limited, and there was loss of tone of the gluteal muscles on the affected side. A course of injections was given between December 18th and February 14th. The patient was kept in bed with extension most of that time. She was put in plaster and allowed up on crutches on January 27th, and discharged soon afterwards. Her weight was the same as on admission. A second course of injections was started early in March, given every second day, as the patient attended as out-patient. She received twenty injections, then ceased to attend, but reported shortly afterwards that she was going about without crutches. She has not been heard of since.

CASE XVII.

A. G., female, aged 32, admitted April 18th, 1912. For the last eight years she had a swelling of the right wrist. She was operated on four years ago and again two months before admission. The swelling was most marked in front and on the ulnar side of the wrist. There was a scar 3 in. in length on the ulnar side with a sinus over the ulnar styloid. She also had a swelling of the base of the first phalanx of the right index finger. No extension of the wrist was possible; flexion was possible only to about half a right angle, and she was only able to partially close the fingers. There were several large glands in right axilla and one small one above the right clavicle. A skiagram showed general blurring of the carpal bones and fusion of the semilunar and os magnum. A first course of injections was given from April 19th to June 7th. The swelling of the wrist became less and the sinus healed. There was less pain on attempted movement, and the weight increased 8½ lb. She was sent to the country with her wrist in plaster. She was readmitted on July 9th, 1912. There was no pain in the wrist, the swelling was further reduced, and the sinus was still healed; the movement was more extensive; loss of weight of 3 lb. had occurred. A second course of injections was given from July 11th to August 28th. She was sent back to the country on September 3rd in plaster; the glands in the axilla were greatly reduced in size and the patient had added over 3 lb. in weight, making a total increase of 8¾ lb. since the commencement of treatment.

CASE XVIII.

K. C., woman aged 31, admitted July 8th, 1912. There was a history of pain in the back for about a year, and there was an enormous abscess in the left iliac fossa. An *x*-ray photograph showed extensive destruction of the third and fourth lumbar vertebrae. There was no visible deformity. On July 21st an incision was made above Poupart's ligament, and over a pint of tuberculous pus was evacuated; the cavity was douched out and partially filled with 2 per cent. formalin in glycerine, and the incision closed. Injections of dioradin were given from July 22nd to September 7th. A week after operation there was an escape of some dark-coloured serum from the wound, the lower end of which remained open, necessitating dressing twice a week. The sinus so formed was scraped on September 11th, when some tuberculous infection of the divided abdominal muscles was found. The wound was cleansed with carbolic acid and iodine, and rapidly healed, and the patient left hospital on September 23rd, 1912. Her weight had increased by 4 lb. 9 oz.

CASE XIX.

E. W., male, aged 26, admitted April 26th, 1912. He had pain in his back, said to be rheumatic, a year ago, and noticed a swelling in the right groin three months ago. On admission there was an enormous swelling of the right iliac fossa and the upper part of the thigh; fluctuation was present, both above and below Poupart's ligament. An *x*-ray examination showed disease of the third lumbar vertebra on the right side. There was no pain in the back or tenderness, but there was rigidity of the lumbar spine. On May 4th the abscess was opened above Poupart's ligament; about 1½ pints of tuberculous pus was evacuated, and the cavity injected with 2 per cent. formalin in glycerine and completely closed. Five days later a large quantity of blood-stained fluid was let out. After this there was a slight serous discharge necessitating dressing two or three times a week. Injections of dioradin were commenced on May 3rd and finished on June 20th. The patient was sent home on July 6th with the wound healed. Though he was not weighed, he appeared to have put on flesh.

CASE XX.

S. M., female, aged 24, admitted April 11th, 1912. An angular deformity existed in the mid-dorsal region which had been coming on for about a year, with great pain in the back and also radiating round the lower part of the chest; paraplegia was also well marked. She was kept flat on her back for over four months. The paraplegia increased till all movement of the lower extremities was lost except slight contraction of the great toes. Pain also increased. An *x*-ray examination showed extensive disease of the fifth to the eighth dorsal vertebrae, with a large mediastinal abscess. On September 14th the right transverse process of the sixth vertebra was removed and the head and neck of the corresponding rib; the abscess was opened, and nearly a pint of pus and caseous material removed. The cavity was filled with 2 per cent. formalin in glycerine and the wound closed in layers. A slight serous discharge from the lower angle of the wound began after ten days, and has not quite ceased yet. Forty injections of dioradin were given between September 16th and November 5th. The condition of the patient has much improved; she has very little pain now and some movement of the legs has returned. It is hoped that she may be put in plaster shortly and got up and about with the aid of crutches. She has not been able to be weighed, but she has evidently put on flesh.

CASE XXI.

H. S., male, aged 18 months. Admitted November 6th, 1911. He was in hospital in the previous June with tuberculous dactylitis of the left middle finger, which was amputated; the wound healed slowly. On admission the patient had a discharging sinus of the right ankle, the finger stump was discharging, there were enlarged glands in the right submaxillary region, also in both groins, and there was a sinus on the right arm. He was given a course of forty injections of ½ c.cm. of dioradin between December 6th and February 12th. The os calcis was scraped out on November 14th. The submaxillary glands were removed on January 9th; his weight increased 2 lb. The finger stump healed, also the submaxillary incision; but the os calcis still discharged and necessitated further operations on February 20th and March 12th. He left hospital some time later with his condition not much improved.

CASE XXII.

E. Q., aged 7½, a delicate looking boy, was admitted on November 29th, 1911. Swelling and pain of the right knee began four months before. The joint was 1 in. larger than the left; an *x*-ray examination showed early erosion of the end of the femur. There was marked tenderness, and pain at night. There was no fluctuation. Forty injections were given between December 4th and February 8th. He developed diphtheria while in hospital, and was discharged with his knee in plaster on February 22nd. The gain in weight was 3½ lb. He was seen in the dispensary, and was going on well. Towards the end of May he developed signs of tuberculous meningitis, and died in ten days.

CASE XXIII.

J. A., male, aged 16. Admitted October 21st, 1911. He had pleurisy of the left side, but no signs of phthisis. While in hospital a lump was discovered in the left epididymis; it increased in size, and was tender. He was given eighteen injections of dioradin; he increased 3½ lb. in weight, but the nodule increased in size. He was operated on on December 9th. The testicle was removed; there was a large caseous mass in the epididymis, semi-liquid in the centre, which was beginning to burst through the coverings. The wound healed, and the patient was discharged December 23rd.

CASE XXIV.

M. L., female, aged 4. Admitted June 6th, 1912. She showed all the signs of early tuberculous disease of her left hip. Extension was applied, and she was given a course of forty injections of ½ c.cm. of dioradin. She was put in plaster, and discharged on July 27th. She was in the dispensary recently; the hip was still in plaster, and she was walking well without crutches and with no pain. The record of her weight was lost, but it had increased.

CASE XXV.

R. W., female, aged 18. Attended as out-patient from February 23rd to April 8th, 1912. She had enlarged glands in her neck, there were two scars on the right side, and one on the left where the glands had broken down, and discharged on

three occasions, the last time about six months before. She was given twenty-six injections of dioradin on alternate days. The glands disappeared, her general health greatly improved, and she increased 3 lb. in weight.

CASE XXVI.

J. D., male, aged 18 months. Admitted December 20th, 1911. The left eye had been eviscerated at the Royal Victoria Eye and Ear Hospital for anterior staphyloma the result of tuberculous ulcer. There was a copious discharge from both ears, extensive ulceration under right eye, discharging ulcers on backs of both hands; the right foot was also discharging, and there was a large cold abscess on the left ankle. The temperature varied from 97° to 101°. The weight was 1 st. 1¼ lb. Forty injections of ½ c.cm. of dioradin were given between December 22nd and February 16th. By this time his weight had increased by 1 lb., his temperature was normal, and he was taking his food better; the discharge from the ears and ulcers was abont the same. On March 1st a large piece of dead bone was removed from under the right eye, after which this wound healed; otherwise the patient did not improve further, and was discharged some time later.

CASE XXVII.

N. B., female, aged 16. Admitted June 19th, 1912. There was tuberculous disease of the right ankle, present for nearly a year; the joint was greatly swollen, and there was great pain on any movement, but the skin was unbroken. Forty injections were given between June 20th and August 14th, and the foot was put in plaster. The plaster was removed on September 10th, the swelling was greatly reduced, there was almost no pain on movement, and she had increased 2 lb. in weight. The plaster was reapplied, and the patient was sent to the country on October 7th, 1912.

CASE XXVIII.

K. L., female, aged 13. Admitted June 10th, 1912. She had tuberculous disease of the right ankle, which was enormously swollen, with several sinuses, both knees were contracted, and there were numerous superficial tuberculous lesions over both thighs, also enlarged glands in her neck. Forty injections were given between June 20th and August 6th. She increased 3 lb. in weight. She developed phlyctenular conjunctivitis and an ulcer, which healed. There was no definite improvement, and she left hospital on September 28th, 1912.

Dividing these 28 cases into two classes according to the presence or absence of sepsis, there were 15 in which there was no sepsis and 13 in which sepsis was a complication. In the first class there were 7 apparent cures (46.6 per cent.), 4 cases of great improvement, which will probably result later in cures (26.6 per cent.), 2 cases showing some improvement (13.3 per cent.), and 1 case which progressed steadily in spite of the injections and had to be operated upon. Finally, there was 1 case which first improved rapidly and gave hopes that it would go on to a cure, but afterwards developed tuberculous meningitis and died. In the second class of 13 cases there were 4 apparent cures, 2 were greatly improved and will probably become cured, 1 was somewhat improved, 5 showed no improvement, and 1 which improved for a time died later of acute nephritis.

Cases uncomplicated by Sepsis.

Case No.	Disease.	Apparent Cure.	Great Improvement (Probable Cure).	Some Improvement.	No Improvement.	No. of Injections.
I.	Pott's caries (early)	+				80
IV.	Tuberculous knee		+			80
VI.	Tuberculous ankle	+				80
IX.	Tuberculous hip (large abscess)	+				80
X.	Tuberculous hip (early)	+				40
XV.	Tuberculous knee		+			120
XVI.	Tuberculous hip (early)	+				60
XVIII.	Pott's caries (large iliac abscess)		+			40
XIX.	Pott's caries (large iliac abscess)		+			40
XX.	Pott's caries (mediastinal abscess)			+		40
XXII.	Tuberculous knee		+*			40
XXIII.	Tuberculous epididymitis				+	18
XXIV.	Tuberculous hip (early)	+				40
XXV.	Tuberculous glands	+				26
XXVII.	Tuberculous ankle			+		40

* Died later of tuberculous meningitis.

Cases complicated by Sepsis.

Case No.	Disease.	Apparent Cure.	Great Improvement (Probable Cure).	Some Improvement.	No Improvement.	No. of Injections.
II.	Tuberculous cystitis	+				80
III.	Tuberculous hip (late septic)	+				120
V.	Multiple foci	+				40
VII.	Multiple foci	+				60
VIII.	Hip (septic)				+	40
XI.	Hip (late after excision)			+*		80
XII.	Cystitis (probable nephritis)				+	40
XIII.	Ascites and fibroid phthisis		+			80
XIV.	Lupus			+		40
XVII.	Wrist		+			80
XXI.	Multiple foci				+	40
XXVI.	Eye, ear, and multiple foci				+	40
XXVIII.	Ankle and multiple foci				+	40

* This case died later of acute nephritis.

In the whole 28 cases there were 11 apparent cures—1 case of Pott's caries without abscess formation, 2 cases of multiple foci, 3 cases of hip disease in an early stage, 1 case of hip disease with a large abscess, 1 case of hip disease in very advanced stage with septic infection, 1 case of advanced disease of ankle, 1 case of cervical glands, and 1 case of cystitis.

In 7 cases there was great improvement, which in some will probably result in cure—1 diseased wrist, 2 cases of Pott's caries with large psoas abscess, 1 case of ascites and fibroid phthisis, and 3 cases of disease of the knee; one of the latter, however, died later from tuberculous meningitis.

In 4 cases there was some improvement—1 case of lupus, 1 case of Pott's caries with mediastinal abscess, 1 ankle, and 1 late case of hip disease after excision and with septic infection, which after considerable improvement died of acute nephritis. In 6 cases there was no definite improvement—1 case of advanced septic hip, where it was doubtful if there was tuberculous disease, 1 case of advanced cystitis with probable involvement of both kidneys, 3 cases of very extensive and advanced multiple foci, and 1 case of acute epididymitis; this latter is really the only marked case of failure, the other 5 were all very bad advanced cases where no treatment could be expected to do much or any good, but this, though an early case, progressed steadily and rapidly while the injections were being given, and at operation the process was found spreading extensively.

As the result of this extended trial of dioradin, I have come to the following conclusions:

1. Dioradin injections are not a certain cure for all cases of tuberculosis; in some cases they will produce a cure more rapidly and more certainly than any other treatment I have had experience of.

2. Early cases of joint disease treated by injections, combined with ordinary methods of rest, good food, etc., will recover more rapidly and more surely than when treated without these injections. The same is probably true of glandular and other surgical affections.

3. In advanced cases with abscess formation, if injections are started before or at the time the abscess is opened, the abscess will usually heal rapidly, the tuberculous process apparently comes to an end, and a cure results in a large proportion of cases.

4. Finally, in those cases complicated by septic infection dioradin injections will generally reduce the temperature to normal, increase the appetite and weight, and lessen the amount of discharge, and in some cases even bring about a final cure, as in Cases III, V, and VII.

After giving over 3,000 injections I can say that I have never seen any harm, either local or constitutional, result from them; it is usually advised that they should be given intramuscularly, but it is just as good to give them subcutaneously: they cause no pain, and have never in my

experience led to abscess formation. Disease of the kidneys is usually mentioned as a contraindication, and Case XI, which died of acute nephritis after two courses of injections, might be thought to point to this; however, the symptoms of nephritis did not start for more than three weeks after the second course was concluded, and there had been septic absorption with a septic temperature off and on for more than twelve months. Also in a case of advanced phthisis, when the urine was loaded with albumen, I gave forty injections on alternate days with no apparent harm to the kidneys. So, if care is exercised and the injections are given every second day instead of daily, even kidney disease need prove no insuperable bar to this method of treatment.

In conclusion, I must acknowledge my indebtedness to Dr. Bernheim of Paris, who has generously provided me with the material used in the treatment of these cases, and also to my colleagues at the Royal City of Dublin Hospital, who have kindly allowed me to try this method on some of their patients, and have seen and examined many of the cases whose history I have brought before you to-night.

REFERENCE.

[1] *Medical Press and Circular*, March 27th, 1912.

GASTRIC HAEMORRHAGE AND OTHER COMPLICATIONS IN A CASE OF CHILDBIRTH.

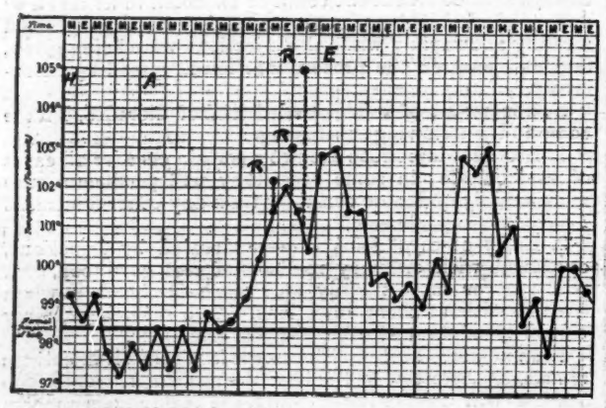
BY W. D. STURROCK, M.A., M.D.OXON.,
OXFORD.

IN recording the following case I wish to state facts rather than to draw conclusions, and to seek information rather than attempt to impart it; at the end of the description, however, I have ventured on a few tentative suggestions.

The patient, a primipara aged 43, was delivered on August 9th, 1912. The history of the confinement and of the *post-partum* period is somewhat remarkable.

The *ante-partum* history was uneventful save in one particular—that for three weeks before labour micturition was performed with great difficulty. The urine was examined from time to time during this period, but showed no trace of either pus or albumen; nor were there any other symptoms of pyelitis.

The patient was of excellent physique and constitution, with a roomy pelvis, and there was no reason to fear any special difficulties, though a prolonged labour was likely, in view of the age of the patient, and consequent rigidity of the soft tissues. This was exactly the case so far as the mechanical processes of labour were concerned; there was no bony obstruction, but the cervix dilated with extreme difficulty, and, further, the uterine contractions were for twenty-four hours distinctly weak. Progress was, therefore, extremely slow, and the application of high forceps was considered, but, since the general condition remained excellent, was rejected for the time being. Shortly after this decision the pains became much more vigorous and progress more rapid; but before long, though the pulse-rate never exceeded 84, the patient became noticeably restless, and very noticeably thirsty. In view of this state of affairs, and since the perineum was obviously offering great resistance, I applied forceps.



H, Gastric haemorrhage; A, acetonuria; E, septic endometritis, *B. coli* and staphylococci; R, rigors.

Severe Gastric Haemorrhage.

Here we obtained evidence of the first untoward occurrence. Under the anaesthetic (chloroform) the patient vomited a very large quantity of blood, which I should judge had been lost into the stomach some three or four hours previously. To judge of quantities under such circumstances is obviously extremely difficult, but to all of us present an estimate of two pints appeared very moderate. This haemorrhage, together with the length of the labour, fully explains the restlessness and thirst described above; it is only remarkable that there was no greater effect on the pulse.

Delivery was effected as rapidly as possible; the uterus contracted reasonably well, the placenta was delivered intact, and there was no remarkable bleeding; the uterine haemorrhage, however, together with the gastric, constituted a serious loss of blood and necessarily caused some anxiety. The good condition of the pulse was fortunately reassuring, and it soon became evident that the patient, though seriously weakened, was no longer in imminent danger. The weakness and the bruising and laceration of the soft tissues made the patient particularly liable to septic trouble. I did not, however, give an intra-uterine douche but ordered vaginal douching; I do not, as a rule, douche either uterus or vagina.

The gastric haemorrhage led to further trouble from the fact that it produced intense heartburn, which practically prevented the patient from taking any nourishment. She was encouraged to take frequent small drinks of water; in addition to this the usual fluid nutriments were tried in turn, but for forty-eight hours the only practicable diet was peptonized milk in drachm doses. In consequence of this limitation of diet the patient was still further weakened; as was natural, the secretion of milk was entirely suppressed.

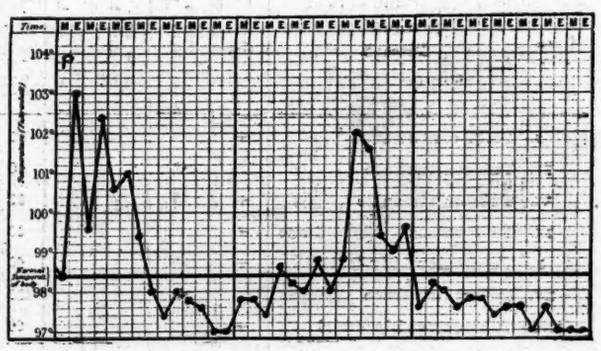
Acetonuria and Acidaemia.

By the fourth day, though nourishment was much better taken, and though the pulse was good and the temperature normal, fresh symptoms supervened; the patient was drowsy, listless, and mentally confused, her memory greatly at fault, and her conversation irrational. She was obviously extremely ill, but I was greatly puzzled to find the cause; true mental disturbance naturally suggested itself, but I did not believe this to be the correct solution.

By the aid of Dr. Eardley Holland, whom I called in in consultation, and to whom my best thanks are due, the cause was eventually found in the presence in the urine of large quantities of acetone and di-acetic acid. To relieve the acidaemia rectal injections were given containing sodium bicarbonate and glucose in solution; though they were retained for some time, there was practically no absorption of fluid. I believe recovery was commencing before this treatment was adopted; none the less, it is very possible that, though the bulk of each injection was returned, the crystalloid substances in solution may have been partly absorbed. In any case, however, the patient improved rapidly, the injections were discontinued, and by the seventh day she appeared to be out of danger.

Septic Endometritis (B. coli and Staphylococci).

On the eighth day the temperature rose to 100.2°; coincident with this rise there was marked tenderness of the breasts, which, in the absence of any sign of uterine trouble, appeared amply sufficient to account for the disturbance. Three rigors, however, supervened, in the last of which the temperature rose to 105° and the pulse to 150; the breasts at the same time became less tender, and it was clear that a further cause must be sought. The lochia had throughout been inoffensive but not suppressed, and there was no uterine tenderness; involution had, however, not been perfect, and the organ was somewhat flabby. Examined under an anaesthetic by Dr. Holland, the cervix was found to be rather patulous, and the endometrium smooth and thickened; there was no visible discharge, but culture tubes inoculated from the uterine cavity developed a few small colonies of *B. coli* and staphylococcus, the former preponderating. Two blood cultures which I prepared the next morning were entirely negative. Vaccines were prepared from the culture colonies and held in readiness, but were never used, and treatment consisted of intrauterine douching twice daily and quinine by the mouth. The uterus contracted well, and the temperature soon fell, but rose again on the sixteenth day to 103.2°; the patient again went through a spell of fever,



P, Pyuria, *B. coli*.

this time without any rigors. The uterus throughout this attack appeared quite normal. The temperature again fell, but rose once more on the twenty-second day.

Pyelitis (B. coli).

I had examined the urine regularly every other day, and found nothing amiss save a considerable quantity of urates; the acetone had gradually diminished, and was by now scarcely to be detected. At this stage, however, a turbid deposit appeared, after solution of urates, which under the microscope was found to consist of pus with a few granular casts; a catheter specimen was drawn off into a sterile bottle, and from the pus a pure culture of *B. coli* was obtained.

The patient was given urotropine and bland fluids, and it was hoped that the condition would turn out to be pure pyelitis and not pyelonephritis; this was, fortunately, the case, despite the presence of casts, and though there was a further relapse on the thirty-third day the temperature settled down for good on the thirty-sixth; three weeks later the urine was completely free from pus or albumen. The patient is now in good health and steadily recovering her normal vigour.

The patient was, I believe, in the gravest danger on three separate occasions: First, from the loss of blood occasioned by the combined gastric and uterine haemorrhages; secondly, from acute acidaemia; and, thirdly, from septic infection with her resistant powers reduced by loss of blood, lack of nourishment, and also, probably, by the acidaemia.

Gastric haemorrhages during labour, at any rate of a severe type from a healthy stomach, are, I believe, very rare, though they have been recorded, as have also intestinal and intraperitoneal haemorrhages. In this instance the patient had shown no sign whatever of any previous abnormal condition of the mucous membrane. I believe the stomach was perfectly healthy.

The acidaemia opens up a large field of inquiry; the three questions immediately arise—(1) whether the urine already contained acetone before labour commenced; (2) whether, if so, the protracted labour increased the amount; and (3) whether the condition was partly or wholly one of delayed chloroform poisoning. Not much chloroform was administered; a little was given during the pains when the head was reaching the perineum, but it was discontinued at the patient's request, and the delivery by forceps was quite a short process; certainly there was far less chloroform given than is frequently the case. I am quite unable to give an answer to these questions; I understand, however, that there is a growing belief among some obstetricians that there is considerable danger in the administration of chloroform in the free manner so usual during confinements.

The septic infection also raises an interesting point. I am obviously unable to prove that the germs were not introduced from without; the facts, however, that the soft tissues were much bruised and the perineum lacerated, that the patient was in an ideal condition for the successful lodgement of germs, and that there was no disturbance until the eighth day, make it unlikely that pathogenic germs were introduced by an exploring finger. The question which particularly interests me is that of the possibility of the urine having contained *B. coli* before the confinement and throughout the subsequent illness. The frequency of pyelitis, when micturition is seriously interfered with in the *ante-partum* period, is well known; here was a case of serious interference with micturition, but without any albuminuria, pyuria, or other signs of pyelitis. Under the circumstances the idea of looking for bacilli did not suggest itself to me; but it appears to me conceivable that there may have been bacilli in the urine, even though actual pyuria did not appear until twenty-two days after confinement. Were such bacilli present, a secondary infection of the uterus does not seem a far-fetched idea.

Lastly, it is worth mentioning that throughout the illness we were handicapped by the great depression of the patient. This could obviously be largely accounted for by the nature, both general and specific, of her long illness, but was unquestionably also of a true psychical nature. The child, who, it may be mentioned, was with great difficulty induced to breathe, was born with a hare-lip and cleft palate; his advent had been greatly longed for by the mother, and his deformity was an intense and lasting disappointment. A successful operation by Mr. Berry on the hare-lip had a very noticeable effect on the patient's ultimate recovery.

A CASE OF CARDIAC ASTHMA.

BY

CLAUDE WILSON, M.D.,

TUNBRIDGE WELLS.

A FEW months ago there was some correspondence in these columns as to whether the term "cardiac asthma" was properly applicable to any clinical entity, and, if so, to what. The following case illustrates the condition which this, and no other term, connotes, and to which the appellation should, I believe, be confined:

C. M., aged 71, a retired clergyman, gouty manifestations for many years, albuminuria and casts for several, and dyspnoea on going uphill or stairs for some months. Heart sounds pure, pulse regular, and blood pressure 160 to 180. Sudden angina pectoris a month ago; two or three moderately severe attacks, followed by "gouty conjunctivitis" in both eyes—one after the other (similar to many previous attacks). Great prostration and dyspnoea on slight movement in bed. Insomnia. Pulse regular, 80 to 90; blood pressure as above; heart sounds pure. Gradual convalescence, first walking into an adjacent room with help on December 26th—a process which was repeated twice on December 27th, the patient feeling better than at any time since the original seizure. Bromides, chloral, veronal, paraldehyde, hyoscine, heroin, and morphine had been used from time to time, none of which affected adversely the heart or the renal secretion. The patient settled for the night at 10 p.m. on December 27th, and as a wakeful night seemed probable heroin gr. $\frac{1}{4}$, which had proved efficacious on two occasions, was injected. Sleep was not obtained; the patient was not comfortable, and at 1 a.m. on December 28th the attack of cardiac asthma developed suddenly. I reached the house at 1.40, to find the patient in a very alarming condition, with the family and two nurses assembled in the room, or just outside, anticipating death. The following notes show the clinical picture presented and the subsequent course of the attack:

1.40 a.m. Patient raised on a pile of pillows. Face and neck congested and cyanosed. Hands and forearms cold, pale, and clammy. Respirations rapid, gasping, oral, 48 per minute. Pulse irregular ("absolutely") and uncountable. Heart, "delirium cordis," no murmurs. Coarse mucous râles all over both sides of the chest anteriorly and laterally; back not examined. Amyl nitrite had failed to relieve.

1.45 a.m. Injection of strychnine and digitaline āā gr. $\frac{1}{30}$, with morphine gr. $\frac{1}{4}$, into left arm subcutaneously. Oxygen administered from cylinder.

1.55 a.m. Aspect easier, respirations 36.

2.10 a.m. Comfortable. Respirations 28. Pulse about 100, and nearly regular.

2.20 a.m. The patient told his wife to go to bed. He was "all right." Slept and dozed all night, taking nourishment once or twice.

8 a.m. Moving easily in bed, and turning from side to side without assistance. Pulse, 82; regular in time, and nearly so in volume. Heart sounds normal. No râles audible anywhere. Respirations 18.

8 p.m. Has spent a very comfortable day in bed.

It would be easy to comment on this case and to speculate on its cause and true nature, as well as on the share the various remedies had in producing the improvement which so rapidly supervened after their administration; but the sole object of this communication is to give a brief clinical picture of "cardiac asthma" as I understand it.

Subsequent History.

Convalescence was resumed and there was no further attack of angina or dyspnoea till 6.30 p.m. on January 17th, when a second attack of "asthma" developed with abrupt suddenness. The clinical picture at 7 p.m. was the same as described above. The same remedies were used, but their effect was slower and no relief was obtained until another $\frac{1}{4}$ grain of morphine was injected. The distress was relieved by 7.45, but disturbed respiration, irregular fluttering pulse, and coarse râles over the lungs continued. The patient gradually sank and died on the evening of January 18th.

THE twelfth International Congress of Ophthalmology, to be held in 1914 in St. Petersburg, will begin on Monday, August 10th (N.S.), and end on Saturday, August 15th. Members desirous of communicating reports are directed to forward the manuscript and inscription fee not later than February 1st, 1914; papers must be written in one of the official languages—English, French, German, Italian, Spanish, or Russian. The official subjects for discussion, selected at the preceding congress at Naples, are, the etiology of trachoma and the nutrition of the eye. The President will be Professor Arnaldo Angelucci, chosen in homage to the committee of officers of the last congress. The corresponding members for the United Kingdom are Mr. Walter Jessop, London, Sir H. R. Swanzy, Dublin, and Dr. George Mackay, Edinburgh. Further information may be obtained from Mr. Jessop, and from Professor L. G. Bellarminof, Ophthalmic Hospital, 38 Mochowaja, St. Petersburg.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

EMPYEMA IN AN INFANT.

WITH reference to Dr. Cummings's memorandum (JOURNAL, January 4th, 1913, p. 20) mentioning a baby four months old suffering from empyema, may I quote the following case in a much younger infant, with which I met last March?

I was asked to see a baby three weeks old, at whose birth I had attended, the complaint being that the infant had a cough. The temperature was 102°; dyspnoea and a croupy cough were present. On examination of the chest the following condition was found: Right side, normal in front and behind; left side, in front resonant, and a few râles over the upper lobe; behind, at the left base the resonance was much impaired, with distant breath and voice sounds. Next morning marked bronchial breathing was heard over the left upper lobe in front, while behind marked dullness was present from the base up to the spine of the scapula. Breath and voice sounds were diminished over this area. Exploration showed the presence of pus, some of which was aspirated; later a piece of rib was resected. The infant passed through the operation well, but unfortunately died next day.

West Hoathly. CECIL WORSTER-DROUGHT.

STRANGULATED HERNIA IN YOUNG INFANT.

ON August 3rd, 1910, when I was house-surgeon to the Liverpool Infirmary for Children, J. E., aged 1 month, was admitted suffering from right strangulated inguinal hernia. Attempts at reduction by taxis and by raising the pelvis and applying ice having failed, the skin was prepared with lysol and spirit soap, and an attempt at taxis under anaesthesia having also failed, I operated. A loop of dark purple small bowel was released, but could not be returned till the ring was nicked (1 drachm of fluid in sac). The sac was transfixed, tied, and cut away. The ring was closed with two or three catgut sutures, and the skin with horsehair and a silkworm gut relaxation stitch. A dressing of collodion acetonum and wool was applied.

Twice during the operation the child stopped breathing and needed artificial respiration. This possibly accounted for faulty haemostasis, which produced a haematocele by next day, but this cleared up without interference, and the wounds healed by first intention. On August 11th I circumcised the child, as it had a bad phimosis.

Bute, South Australia. GILBERT BROWN.

RECOVERY AFTER TAKING LARGE DOSES OF CORROSIVE SUBLIMATE.

MR. A. LEONARD FULLER reports in the BRITISH MEDICAL JOURNAL of January 18th, p. 116, a case of recovery after taking 8¾ grains of corrosive sublimate. It may be of interest to record that I have had two such cases.

I was called to see Mrs. A. on the day after confinement, and found her collapsed, pulseless, and apparently dying. On inquiry I discovered that a soloid which I had unwisely left to prepare a lotion had been administered to her by a somewhat bibulous attendant. Fortunately immediate vomiting brought up a greater part of the soloid undissolved. Eggs were administered freely, and stimulants and later intestinal sedatives; after a few days of anxiety she was well again.

At Marseilles, while acting as ship surgeon, a passenger inadvertently swallowed the whole solution he had made with an 8¾ grain soloid, not noticing his mistake owing to a rather too festive evening ashore. He was forced to take eggs to the number of, I think, a dozen, and after abdominal pain for a few days was well. In this case also immediate vomiting, owing to the intensity of the poison, saved the patient.

The above experiences have taught me the danger of entrusting such powerful poisons to persons unless assured of their sanity and sobriety.

FERGUSON FLOYD, M.B.,
Medical Officer, Kilkeel Union Infirmary.

Reports

ON

MEDICAL AND SURGICAL PRACTICE IN THE HOSPITALS AND ASYLUMS OF THE BRITISH EMPIRE.

CHELTENHAM GENERAL HOSPITAL.

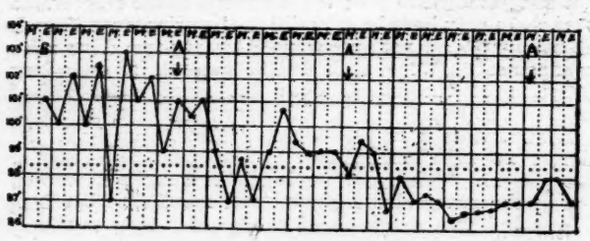
RHEUMATISM AND CHOREA.

(By J. RUPERT COLLINS, M.A., M.D., Honorary Physician.)

THE important paper of Dr. Branson on the Avenues of Rheumatic Infection, published in the BRITISH MEDICAL JOURNAL of November 23rd, 1912, in which he alludes to the relationship between rheumatism and chorea, may render a brief note of the following case of interest.

N. Y., a servant girl, aged 18, was admitted under my care in January, 1911, suffering from severe chorea. She was so violent and difficult to control as to necessitate the use of padding round the sides of the bed, to prevent her hurting herself, and the constant care of a nurse. Arsenic and various kinds of sedatives—including bromides, chloretone, chloral, and morphine—were tried with little or no benefit. A hot pack at night quieted her to some extent, and this was employed for some weeks. Thyroid extract was tried and was followed by a very marked improvement for four days, when the patient's choreic movements became even more violent than before, and she looked so ill as to raise grave doubts as to her recovery. On January 21st I made a lumbar puncture, and 15 c.cm. of clear cerebro-spinal fluid came away freely. The patient was very quiet following the rachicentesis, and had a good night's sleep. Hitherto she had been much troubled with insomnia. The cerebro-spinal fluid proved sterile and free from cellular exudation. The improvement only lasted a few days. On January 30th I drew off 50 c.cm. of blood from the median basilic vein into a flask containing 60 c.cm. of ordinary nutrient broth and 25 c.cm. into a similar flask containing lactic acid lactose milk broth. When incubated the former flask proved sterile, but the latter yielded a pure culture of a diplococcus. This coccus grew in twos and in short chains of four and six, but no long chains were found. It grew fairly vigorously on agar and was Gram-positive, but not strongly so, a long application of alcohol decolorizing it. A vaccine was prepared of this organism, and on February 6th I inoculated 10 million and on February 7th 50 million of this vaccine. The patient began to improve almost at once after the first injection. On February 9th she was well enough to allow of her bed being pushed on to the balcony, and on February 11th she was able for the first time since her admission to feed herself. On February 14th the sister of the ward showed me that she could now hold a cup without spilling the contents. She continued to improve steadily, and was discharged from the hospital on March 14th. As there was still a tendency to jerkiness when attention was drawn to her, she attended at the hospital for three months as an out-patient, receiving an inoculation once a week for some time after all trace of her unsteadiness had ceased.

Shortly after the above patient was discharged, a girl, M. H., aged 19, was admitted suffering from a second attack of typical rheumatic fever. This patient had a



A = Inoculation with vaccine, 100 million each time.
B = Admission to hospital.

mitral systolic bruit, and her knee and hip joints were swollen and tender. She was given no other treatment than injections of the vaccine prepared from the above case, and her temperature, as figured in the chart, showed

an improvement, which was accompanied by a general improvement of her other symptoms. Her temperature remained down, and she made a good recovery. No doubt it will strike some as being merely a coincidence. Perhaps it was. As the nature of the organism was not investigated by the inoculation of animals I have hitherto abstained from publishing the case, and do so now with diffidence and simply as of some possible interest in relation to Dr. Branson's paper.

Reports of Societies.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF SURGERY,

Friday, January 10th, 1913.

Mr. R. D. PUREFOY, P.R.C.S.I., President, in the Chair.

Tuberculosis of Lower End of Femur.

MR. W. I. DE C. WHEELER exhibited three cases of tuberculosis of the lower end of the femur in children, illustrating recent pathological and anatomical work on this subject, and spoke on the pathology of tuberculosis in bone. In each of the three cases the disease occurred at the site of election, the metaphysis, and in each case the femur was divided with a Gigli's saw above the diseased area and wrenched from the epiphysis. New bone was rapidly formed, with excellent results. *X*-ray photographs showed the accurate and complete manner in which the new bone replaced that which was removed. The first case was operated upon in 1909, before any work on the subject had been published. The reason the metaphysis and not the epiphysis or diaphysis was the site of election for tuberculosis in bone was anatomical. The infection was haemogenic, and could be traced in most instances to the milk supply. The nearer the metaphysis was to the joint the more readily the joint became affected, as was seen in the case of the elbow and hip. Mr. Wheeler said that scraping, curettage, and drainage were unscientific methods only to be employed when there was some special reason for not performing the ideal radical operation. Mr. J. BOYD BARRETT asked Mr. Wheeler to illustrate a little of the after-treatment. Mr. W. PEARSON considered that this method of treatment was the only sound practice in dealing with a bony cavity of any large extent. He was of opinion that some extension was necessary while the new bone was forming, otherwise there would be a great amount of shortening of the limb, and he had no doubt that even in the cases shown there would be some shortening. Possibly a less extensive operation, not involving the excision of the whole circumference, might be helpful. He was much interested in the cases, which illustrated how rapidly the bone formed in young subjects. Mr. HAUGHTON said that the cases proved the excellence of the operation. His experience was that the vital point in the treatment was the removal of all disease. *X*-ray photographs should be relied on to ascertain the extent of the disease, and the operation could then be planned precisely. He referred to his experience with osteomyelitis, and said that complete removal of the diseased bone was followed by complete recovery. In a recent case he had removed about 8 in. of the diaphysis of the femur, and when the sequestrum was removed there was a 3-in. gap. Extension was put on, and in three months' time the wound was healed, and in six months' time the patient was walking on a new column of bone. Mr. MAUNSELL said that he thought that a great many of these cases were looked on as tuberculous which were really septic osteomyelitis; but he had no doubt that afterwards they had become tuberculous. He was in agreement with the removal of all diseased tissue, but he had seen cavities which had not been laid thoroughly flat, and they healed up perfectly well. In osteomyelitis cases, either tuberculous or non-tuberculous, he thought that it was not wise to proceed with great haste, and that they should be guided by *x* rays. He thought that certain cases would heal up with a much more modified operation than the total removal of the diaphysis. These cases taught the surgeon not to be afraid of removing a large quantity of bone. The PRESIDENT related a case under Dr. Barton, a boy with four-fifths of one tibia in a shocking condition from chronic disease of the bone. The sequestrum was removed, and the boy made an extraordinary recovery, and a couple of years afterwards had grown to nearly 6ft. in height. Mr. WHEELER, in reply, referred to the after-treatment. He said that this seemed important at first sight, but he found that 7 lb. or 8 lb. of sand-bags were good enough for the pull. He pointed out that the interesting part of the subject was really new, and that it was first pointed out by Lexer, who showed that all the blood vessels anastomosed in this region, and that contusions and sprains easily set up tuberculous abscesses in the joint. With regard to Brodie's abscess, he would like to dissociate himself from everything but tuberculous disease. As to the periosteum being adherent in each of the three cases, he found it easy to separate that membrane. He used bismuth paste and iodoform, and did not attempt to fill up the cavity. The cases were very chronic when he got them, and there was no hurry about them. In the first case he had tried scraping without effect.

Scapular Crepitation.

Mr. W. PEARSON showed a child, aged 7, who first came to him about two years ago for creaking in the shoulders. The condition was first noticed after an attack of measles. Symmetrical crepitations were to be found on moving the scapula. *X* rays showed nothing to account for this. Massage and fibrolysin injections were tried, but there was no apparent change in the condition. The crackling was quite audible. There might be cartilaginous formation or exostoses, which might be so small as not to be shown by *x* rays. There was nothing in the muscles to account for the peculiarity, and there was certainly nothing in the joint. Mr. MAUNSELL suggested hysteria. He had a patient under his care who could make a similar kind of grating with both knees. He knew of another girl who could crack her knees as loud as a carter's whip. The PRESIDENT said that, although unwilling to hazard any observations on a purely surgical question, he had in mind the case of a young girl in which the movement of one knee was attended by a cracking sound that caused her discomfort, but he thought the condition afterwards disappeared. He looked on the case as of rheumatic origin. Mr. WHEELER suggested the possibility of some myositis ossificans affecting some of the muscles. Mr. PEARSON, in replying to the remarks, said he was not inclined to look on the condition as hysterical on account of the child being so young (only 5 years old when first seen). Myositis ossificans ran into his mind, but if this was the cause he thought the movements should be somewhat restricted, and something should be seen by the *x* rays.

Aneurysm of Abdominal Aorta Cured by Operation.

Mr. R. CHARLES B. MAUNSELL showed a woman, aged 30 years, upon whom he had operated on August 3rd, 1912, for cure of a large aneurysm of the abdominal aorta in the region of the coeliac axis. Before operation the aneurysm had a diameter of over 7 in., pulsated violently, and caused much pain. The operation consisted in abdominal section and the insertion of a Colt's wire wisp, which measured 5 in. and contained 150 in. of wire, having a surface area of 3½ sq. in. On the eighth day after operation she was allowed fish, etc., and on the eighteenth day she was permitted to sit in a chair, but she did not leave hospital until November 5th—three months after operation—as she would have had to work for her living as soon as discharged. Her present condition was excellent; she was free from pain and was able to do ordinary work, including the scrubbing of floors. There was a firm, hard mass, of about 3 or 4 in. diameter, to be felt in the epigastrium, which pulsated with pulsations transmitted from the aorta, but exhibited no distensile pulsation. There was a mitral bruit to be heard over the heart, but the loud bruit over the aneurysm had disappeared. *X*-ray examinations did not show any distensile pulsation. Mr. C. A. BALL inquired if a Wassermann's reaction had been done, as the case seemed to be of syphilitic origin, and also if any antisyphilitic treatment had been given in addition to the operation. Mr. WHEELER said that he had treated three patients by a similar method, and he thought it was important that every such case should be published, seeing that abdominal

aneurysm was not frequently seen. All had pain like Mr. Maunsell's, which disappeared in a few days after operation. His first case was very similar to Mr. Maunsell's, and it was now done two years, and the man had been working ever since. One ended fatally, but it was complicated by an enterostomy. Mr. MAUNSELL, replying to the remarks, said that a Wassermann's reaction had not been done, but he had no doubt the case was of syphilitic origin. The first case he had met with was in a man who was under treatment for vomiting, and the aneurysm was not discovered until *post mortem*. The second was in a woman who was supposed to need a gastro-enterostomy. The fourth was also a stomach case, and it was accidentally that the aneurysm was found. He had seen seven aneurysm cases, but in only two had he operated.

Child with Webbed Fingers and Toes.

Mr. J. BOYD BARRETT showed a child with webbed fingers and toes. There were six toes on each foot, and the amputation of the outer toe was contemplated. As two of the fingers were adherent, Didot's operation was proposed, lest the deformity should interfere with growth. The PRESIDENT referred to a case of a similar nature, in which the mother of the child exhibited a similar deformity. Mr. MAUNSELL said that recently he kept a patient with extra digits in hospital for a long time, and removed them and separated the fingers. He would advise not doing too many fingers at once; the skin could be brought together perfectly if they were drawn apart and a little of the fat cut out. His method of grafting was to stitch the edges. The hands were now absolutely normal. Mr. J. BOYD BARRETT, in replying, said he was in full agreement with Mr. Maunsell's remarks.

SECTION OF PATHOLOGY.

AT a meeting held on Friday, January 3rd, Professor A. H. WHITE, President, in the chair, Dr. W. G. HARVEY showed a car-driver, aged 39, suffering from *Norwegian scabies*, with specimens under the microscope. His general health had always been good. The eruption commenced ten years ago on his hands and fingers, and remained limited to them till recently. About two years ago his hands were *x* rayed, the condition having been probably regarded as a form of hyperkeratosis. He came under the care of Dr. Wallace Beatty, who found that the scalp was covered with abundant dry, greyish scales, forming in places a thick coating resembling psoriasis. The trunk was universally reddened (erythrodermia), the skin somewhat thickened, especially of the back, and the surface was covered more or less abundantly with dry scales, causing roughness in most places, but on certain prominent parts—on the shoulders over the scapulae—the scales formed a thick, dry, hard, adherent coating, and places on the back showed traces of moisture suggestive of an eczematous state. There was an extremely heavy coating of dry adherent scales on the prominences of the hips over the trochanters and on the buttocks, especially the right buttock, on which the patient rested, on account of achondroplasia of the thigh, present on the left side. The extensor aspect of the elbows was covered with thick, heaped-up, dry, adherent scales; the arms showed patchy redness and scaling, but were not universally affected. The hands and fingers presented a remarkable appearance; projecting conical masses of dry, greyish scales were present over and round the nails. There were also smooth scaly masses, readily detached with the blade of a forceps once the edges had been raised all round. This method of removal caused much pain, so that the remainder were left for subsequent removal by softening in hot sulphur lotion. The toes were affected in a similar but slighter degree to the fingers. Mr. WILLIAM PEARSON showed a specimen of *Villous adenoma of rectum* from a female, aged 56, complaining of piles with attacks of diarrhoea and haemorrhage. The patient was a good colour, but stated she had been losing weight. Altogether the abdomen suggested chronic intestinal obstruction in the lower bowel. On rectal examination no haemorrhoids could be found, but the entire mucous membrane, from immediately above the anal canal to the upper limit which could be reached by the finger, felt soft and hypertrophied, with numerous polypoid masses. An exploratory abdominal incision was made through the left rectus muscle, when an enormously distended atonic colon and caecum were exposed, and it was seen that no growth existed above the rectum. The abdomen was then closed, and the specimen presented was removed by drawing it out of the anus with clip forceps and excising it as in Whitehead's operation for haemorrhoids. It stripped easily off the muscular coats of the bowel. Microscopic section of the growth showed no malignancy. Since the operation the patient had been quite free from symptoms, and control over the bowels was perfect. Dr. R. M. BRONTE showed two cases of *Ruptured thoracic aneurysm*. One had burst into the pericardial sac, the other was a dissecting-room specimen. It showed an aneurysm on both sides of the thorax, the left side dilatation causing extensive compression of the upper lobe of the lung. Both cases were associated with extensive pleurisy. Dr. T. T. O'FARRELL showed a specimen of *Rupture of the right ventricle*. The patient was a middle-aged man who had just fallen 62 ft., and was admitted dead into hospital. Several bones of the extremities were fractured. An examination of the thorax showed fracture of the second and third left costal cartilages, fracture of the sixth rib on the right side, and fracture of the sternum at the junction of first with second part. The pericardium was adherent to the sternum, but not to the heart, and was found full of blood, though not greatly distended; no definite perforation or laceration could be detected. The heart showed some excess of fat, and was contracted. The right ventricle was injured in two places. First, an irregular semicircular wound 1¾ in. long, beginning below the origin of the pulmonary artery, and extending downwards more or less parallel to and with its convexity towards the interventricular groove. Secondly, a punctured wound ½ in. in diameter slightly below the auriculo-ventricular groove, and at the point of junction between the middle third of a line drawn from the margo acutus to the interventricular groove. The injuries to the sternum and costal cartilages did not correspond to the generally accepted surface-marking of the right ventricle. The right ventricle was said to be covered by most of the middle portion of the sternum and the third, fourth, fifth, and part of the sixth left costal cartilages, none of which, with the exception of the sternum, were injured in the present case. The right auricle seemed more exposed to injury. The only explanation would appear to be that in falling the liver, which was enlarged, pressed the heart upwards.

MIDLAND OBSTETRICAL AND GYNAECOLOGICAL SOCIETY.

Tuesday, January 7th, 1913.

Dr. MALINS, President, in the Chair.

THE PRESIDENT announced that the Council had accepted an invitation from the North of England Obstetrical and Gynaecological Society to take part in a joint meeting with the North of England, Glasgow, and Edinburgh Societies, to be held in Manchester upon some date to be fixed in May next.

Endothelioma of the Undescended Testis.

Dr. THOMAS WILSON read notes upon a case of endothelioma of the undescended testis occurring in a male pseudo-hermaphrodite aged 29. The patient, who had been brought up as a woman, sought advice on account of severe lower abdominal pain and of the passage of blood in the urine, said to represent a catamenial period. In the hypogastrium a fairly defined, rounded, tense, and elastic tumour extended from the pubes upwards to 2 in. below the umbilicus. The temperature and pulse were high, and there was troublesome vomiting. The patient had been carrying on the trade of a butcher in partnership with a woman. The voice was quite masculine; the cheeks, chin, and upper lip were covered by sparse coarse hair, ½ in. in length, forming a rudimentary beard and moustache. The hair of the head was fairly plentiful and nearly 3 ft. in length. The patient's figure was markedly feminine, although the breasts were small. The vulva presented an unusual appearance. The labia majora were thin, and between them was a deep cleft, in the anterior part of which was a penis-like organ 2½ in. long, with a well marked glans. A depression, but

no orifice, was present on the lower surface of the glans. An inch further back in the middle line was a urethra-like orifice. A catheter passed into this canal met with obstruction after passing about 1 in. It then turned upwards and forwards and entered the bladder. In the right labium majus was a small, elastic, tender body, which could be pushed upwards into the inguinal canal. The left inguinal canal and labium were empty. The pelvis was filled with a fixed tender swelling the size of a cocoanut. The patient stated that at about 20 years of age she began for the first time to lose blood with the urine, and since then had done so fairly regularly for three days every month. Laparotomy was performed, but complete removal of the tumour was impossible. The patient died a fortnight after the operation, having undergone extreme wasting. Microscopically the tumour was considered to be an endothelioma developing in relation with the undescended left testicle. The paper was illustrated by a series of photomicrographs, demonstrated with the epidiascope. Mr. BECKWITH WHITEHOUSE thought that the occurrence of periodical haemorrhages was a point of much interest. He was at a loss to know whence the blood came. Furthermore, if it was a case of true menstruation, the supposed necessary hormone must have been produced by the testicle. The only alternative explanation was that the gland in the right labium was an ovary, the case being thus one of true hermaphroditism. As regards the histology of the tumour, he was not quite prepared to admit that it was undoubtedly an endothelioma. It was an obscure neoplasm in which cells of an embryonic type were present, and to which the term sarcoma could be applied. Beyond this he did not think it was possible to dogmatize. Dr. EDGE agreed with the difficulty raised by Mr. Whitehouse as to the explanation of the alleged catamenia. He suggested that the so-called testicle was in reality an ovary, what appeared to be seminiferous tubules really consisting of mesonephric ducts. The specimen was referred to the consideration of the Pathological Subcommittee.

Chorion-epithelioma.

Dr. EDGE showed a uterus the seat of early chorion-epithelioma, and by means of the epidiascope demonstrated microscopical preparations of the same. Dr. WALTER SWAYNE, quoting his own experience, did not think that chorion epithelioma was so often preceded by vesicular mole as was believed. Chorion-epithelioma occasionally underwent spontaneous cure, as in a patient of his that developed metastases in the lungs, with bloody sputum, six years ago. She had recovered completely and was well to-day. Dr. EDGE agreed with Dr. Swayne's remarks about vesicular mole. If it was as much as 40 per cent. of all cases of chorion-epithelioma, then to him this was an indication to remove the uterus for vesicular mole. His experience was that deposits did not fibrose.

Treatment of Obstructed Labour.

A discussion on the treatment of obstructed labour was opened by Dr. THOMAS WILSON, who said that a satisfactory definition of "obstructed labour" was not possible. It was meant to imply the presence of some factor which interfered with the ordinary sequence of events of normal labour. Obstruction was met with in all degrees, and gave rise at one end of the scale to a little interference with the presentation of the fetus, or mechanism and duration of delivery, and at the other, in the absence of skilled help, to the death of the mother and the child. The most frequent cause for neglected cases of obstruction was failure on the part of the patient or midwife to call in medical advice at a sufficiently early stage. Furthermore, there was also a too prevalent idea that the whole art of midwifery consisted in extracting the fetus, gently if possible, but extracting by any means. The remedy for much of the illness and suffering arising from obstructed labour must be sought in the better teaching of midwifery, which in the future would have to be more practical and clinical than had been possible in the past. By proper care, obstructed labour could generally be foreseen, and its ill-effects obviated. It was well to regard every labour as like to be obstructed, or in some other way complicated, for here most emphatically forewarned was forearmed. Every woman who engaged a medical man or a midwife to attend her first labour should at least have the external pelvic measurements taken. A history of steadily increasing difficulty in successive labours was not uncommon. The explanation was to be found in Matthews Duncan's observations that the birth weight of the children of a woman gradually increased until her age was 35, after which it again diminished. Another point to note was that contraction at the outlet was more common than was usually understood, and the diameters here should also be measured. Dr. Wilson then drew attention to the importance of "Müller's impression" method in estimating the relation of the size of the fetal head to the pelvic brim. The method had been slightly modified by Munro Kerr and was frequently known by his name. Rules were then formulated to guide treatment, adapted to the various conjugate diameters. Cases in which the true conjugate lay between 2¾ in. and 3¼ in. were those which furnished most of the difficult problems. Labour should rarely be induced in a first pregnancy. Frequently a living child was born at term through a pelvis that appeared to offer grave difficulties, and it was good practice to regard the first labour as a test one and to watch its course and result very closely. At the onset of labour, if difficulty were expected, the importance of a thorough cleansing of the vulva and detailed examination could not be too strongly emphasized. One vaginal examination made on a patient who had been imperfectly cleansed might be fatal to the success of an operation that later became necessary. Dr. PURSLOW referred to the damage frequently produced by the injudicious use of forceps, to which practically every case of badly lacerated cervix was due. In selecting an instrument, care should be taken to obtain one in which the possibility of slipping of the blades was reduced to a minimum. Milne Murray's axis traction forceps was the best instrument. A proper anaesthetist should be present wherever difficult forceps delivery was contemplated. Craniotomy was still quite justifiable when local surroundings absolutely precluded the possibility of performing Caesarean section. Mr. CHRISTOPHER MARTIN concurred in the importance of selecting a method of treatment in accordance with the patient's surroundings; they were not justified in submitting a mother to risk for the sake of a doubtful child. Reliance could not always be placed upon the previous obstetrical history in guiding future treatment. For example, he remembered the subject of a prospective Caesarean section for pelvic contraction who delivered herself with ease. He thought that symphysiotomy and pubiotomy would eventually fall into disuse. The tendency nowadays was to perform more and more Caesarean sections. If this operation were undertaken before labour set in, the risk was very little more than with ordinary labour. Dr. EDGE asked if diet could in any way influence the size of the fetus. He had seen cases of severe cervical laceration not due to the forceps or any other instrument. With regard to "suspect" cases of Caesarean section, he had successfully practised a method of delivering the membranes covering the lower uterine segment into the vagina by pushing them through the cervix. He did this to obviate infection, inasmuch as he thought that the membranes covering the internal os and the lower uterine segment were most likely to be contaminated. Dr. WALTER SWAYNE referred to cases of elderly primiparae in whom the pelvic measurements were practically normal, and yet when labour was in progress it was necessary to deliver by craniotomy. The cause of dystocia was undoubtedly in these cases a rather large child. The difficulty was usually not recognized until labour had been in progress for some time. In such a class of case pubiotomy or symphysiotomy might be valuable, although he was not strongly in favour of either as an operation of election. Dr. SMALLWOOD SAVAGE thought that symphysiotomy and pubiotomy might be of use in producing some enlargement of the pelvis after forceps had failed, and that these operations should be reserved for such cases. He had performed pubiotomy upon two cases, and had been satisfied with the results. Sepsis was undoubtedly a contraindication to the operation, but it was difficult to say which cases were at the time infected. The PRESIDENT observed that the greatest troubles in the treatment of obstructed labour were usually due to want of diagnosis of position. Frequently forceps were applied to undiagnosed occipito-posterior positions, with disastrous results. No speaker had referred to the advantages

of version in preventing obstruction. In some cases of flat pelvis he had found it a very easy and effective operation. With regard to Caesarean section, it would undoubtedly replace craniotomy and become the operation of election and not necessity. Craniotomy performed upon the living child should never be entertained. The President also referred to the importance of the presence of meconium with a head presentation as a sure indication of impending death of the child. Dr. THOMAS WILSON, in his reply, thought that it was sometimes difficult to avoid craniotomy upon a living child. Quite recently he had had to choose between this operation and Caesarean hysterotomy in a case that was obviously infected, and he had preferred the former. He was thus in accord with Mr. Martin's principle, to save the mother primarily, but if possible save both. In Catholic countries, on the other hand, conservative midwifery of the fetus was of greater import. As regards diet, he did not think that it had much influence upon the size of the child, although a diet as free as possible from carbohydrates and fluids had been recommended to produce reduction of weight. He had expected to hear something upon pubiotomy in the course of the discussion, and had not been disappointed. Personally he had performed five pubiotomies, and had had no cause to regret the same from the maternal side. The use of this operation would always be reserved for "borderland" cases, in which the fetus was alive. It should not be employed in first labours, nor yet, again, when infection was present.

ROYAL SOCIETY OF MEDICINE.

PATHOLOGICAL SECTION.

Tuesday, January 21st, 1913.

Professor R. T. HEWLETT, President, in the Chair.

The Transformation of Non-pathogenic into Pathogenic Bacteria.

DR. D. EMBLETON and Dr. F. H. THIELE made a communication upon this subject. The authors showed that they were able to produce septicaemia in animals with non-pathogenic bacteria. It was found that non-pathogenic bacteria could be divided into two main groups: (1) Those represented by *B. mycoides*, *smegmae*, *phlei*, which would not produce septicaemia unless they were inoculated into animals which had been previously sensitized to them by the injection of the dead homologous bacteria. (2) Those which would not produce septicaemia in the above-mentioned way, and which were not pathogenic even in massive doses, but were rendered pathogenic by injecting the bacteria in a medium which hindered the access and delayed the activity of the antibodies present in the animals. The media which were used for the suspension of the bacteria were hypertonic saline and strong gelatine. These by themselves had no effect on the animal. Thus the authors were able to produce septicaemia with *B. hoffmannii*, *B. cyanogenus*, *Sarcina lutea*, *Proteus zenkeri*, the organism being recovered in all cases from the heart's blood and spleen. Septicaemia was also produced with staphylococci and streptococci not pathogenic to guinea-pigs. They further showed that the bacteria which had been thus rendered pathogenic had now become so virulent that they were capable of producing septicaemia in normal animals without the aid of the above-mentioned processes, and not only in animals of the same species as those used for the original experiments, but also in animals of other species. To quote the case of *B. mycoides*, this organism, as is well known, normally will not grow at 37° C.; the authors educated it to grow at this temperature, and after inoculating an agar slope of this into a guinea-pig which had been sensitized a week previously with dead *mycoides*, were able to produce a septicaemia closely resembling anthrax. The organism isolated from this animal was now capable of producing septicaemia in normal guinea-pigs, rats, and rabbits. The organism had also changed its characters in that it had lost its flagella and had developed a capsule. Similarly a miliary tuberculosis was produced in normal guinea-pigs and rabbits by a like procedure, using *B. phlei* and *B. smegmae*. The authors from their experiments concluded that bacteria do not possess a toxic "endotoxin," but that the toxic substance is only liberated from the bacterial protoplasm by the action of antibodies in the animal body. They have demonstrated that, in animals dying from any form of bacterial infection or toxaemia, a toxic substance is present in the blood and effusions, which, when inoculated into normal guinea-pigs, produces rapid death. The symptoms and *post-mortem* appearances are identical in every case. The authors considered that the toxic substance was liberated from the bacterial protoplasm by the action of normal and induced specific antibodies, which they considered acted on the bacterial protein similarly to digestive ferments. The toxic substance is an early product of this action, and produces according to its accumulation, the symptoms, fever and death, of bacterial infections. The authors have come to the conclusion that the phagocytic sequence in serous-cavity-infections depends upon: (*a*) The "innocuousness" of the bacteria; this may be primary or the result of the action of the antibody degrading the toxic to non-toxic substance. (*b*) The rate of accumulation of toxic substances formed from the bacteria. A migration of polymorphonuclear cells proportioned to the degree of toxicity occurs before the complete sequence ensues, or the animal may die in this stage. They concluded that immunity was cellulo-humoral. The authors considered that: (*a*) Pathogenicity depends upon (1) the virulence of the bacterium; (2) the antibody activity present in the animal body. Thus they have shown that some bacteria do not become pathogenic until the animal has developed an antibody against that bacterium—for example, *B. mycoides*. On the other hand, other bacteria do not become pathogenic until the antibody activity is greatly diminished. Thus by diminishing the ferment activity by hypertonic salines they were able to produce septicaemia with these organisms—for example, Hoffmann's bacillus, *B. cyanogenus*, sarcina, etc. (*b*) The virulence of a bacterium depends upon the rate of liberation of toxic (aggressive) substance, and the retention of the same in the immediate vicinity of the bacterium. The *Bacillus mycoides* was shown to develop a capsule. And, further, the action of the hypertonic saline used is to bring about the formation of a capsule—that is, a halo of bacterial protoplasm. The authors considered that this capsule protected the bacterium from the further action of the antibody by producing a zone of ferment equilibrium around it, which on the one hand acted aggressively and prevented phagocytosis, and on the other protected the bacterium from destruction by the antibody. The authors were able to produce by their methods septicaemia with the Hoffmann bacillus, which up to now has never been possible, and were able to demonstrate in the blood of these animals the same toxic substance as is present in the blood of all animals dying from septicaemia and toxaemia. They further argued that the so-called exotoxin is only exuded bacterial protoplasm, and, like the so-called endotoxin, only becomes toxic after it has been acted upon by the antibodies of the infected animals.

HUNTERIAN SOCIETY.

CLINICAL AND PATHOLOGICAL MEETING.

Wednesday, January 22nd, 1913.

Mr. A. H. TUBBY, M.B., F.R.C.S., President, in the Chair.

Treatment of Fractures.

THE PRESIDENT showed a number of *x*-ray photographs, showing the results of treatment of fractures. He pointed out that some are best treated by wiring, others by the use of splints. He specially recommended operation in the case of fractures of the olecranon and of the patella, and found that operative treatment was satisfactory in separation of the upper epiphysis of the femur from the shaft, separation of the upper epiphysis of the humerus from the shaft, certain fractures of the leg just above the ankle-joint, and certain fractures of the lower part of the forearm.

Malignant Disease of Tonsil.

Dr. KELSON showed a case of malignant disease in a man aged 45, apparently originating in the lower part of the right tonsil. It pressed the larynx over to the left side, and there was dysphagia. He asked whether, in

view of the inoperable character of the case, any members present had had experience with selenium, Coley's fluid, *x* rays, or radium.

Specimens.

Mr. F. S. KIDD showed: (1) A curious case of bone disease in a boy, the diagnosis being osteogenesis imperfecta. (2) Skiagrams of kidneys whose pelves had been filled with collargol. Dr. HALDIN DAVIS showed a case of Paget's disease of the nipple, which had been treated by radium; also microscopical slides of molluscum contagiosum and favus.

BRADFORD MEDICO-CHIRURGICAL SOCIETY.

AT the January meeting, Dr. F. W. EURICH in the chair, Dr. WRANGHAM read a paper on *Poisoning*, which was considered chiefly from the point of view of diagnosis. The medico-legal aspect was also discussed. Poisoning might be suicidal, accidental, or homicidal. Clear evidence of suicidal poisoning was, as a rule, not wanting, for generally the poison was known or the symptoms were convincing. If not, or if the patient were found dead, the stomach contents must be investigated. In these cases, although legally the police should be informed, it was not always in the interest of the patient to do so. In most cases of accidental poisoning the fact that the patient had been poisoned was quite clear, as for instance after partaking of poisoned food, when the symptoms appeared suddenly and perhaps more persons were similarly affected. In the cases where medicine had been taken by mistake, the facts were stated readily enough and every assistance given to the medical man. In chronic cases, such as the Manchester epidemic of arsenical poisoning from beer, it was the cumulative evidence of numbers of individuals affected which led to detection. Lead poisoning from water came under the same heading. In acute homicidal cases, and in those where death ensued, the diagnosis was, as a rule, fairly clear. In chronic homicidal cases, as for instance arsenical poisoning, the medical man was often in great difficulty and the question as to the advisability of informing the relatives or the police in such cases was very minutely considered. The paper was discussed by Drs. HONEYBURNE, RABAGLIATI, LANKESTER, ANGUS, HUGHES, LODGE, and EURICH; and Dr. WRANGHAM replied. Dr. HONEYBURNE read a paper on *Toxaemia*. Toxic poisoning in some shape or other was met with in all of the following morbid processes: (1) All the specific infective fevers; (2) diseases of animal parasites; (3) chronic intoxication, such as alcohol, lead, arsenic; (4) food poisons (fish, meat, cheese); (5) diseases of metabolism (gout, diabetes, uraemia). The toxaemias of the specific infective fevers were taken as an example, more especially that of diphtheria, being the best known of all. After reviewing our knowledge of the diphtheria bacillus and explaining the formation of endotoxins and exotoxins and the action of antitoxins, Dr. Honeyburne pointed out that it was only in the case of the exotoxins that antitoxin was formed, and unfortunately in man the exotoxins only occurred in diphtheria and tetanus. He then went on to discuss anaphylaxis, explaining the cause and showing how it could be avoided. He next described the bactericidal substance in the blood which caused the destruction of the invading bacilli and which was made up of two separate ingredients—the amboceptor and the alexin or complement. A short account was then given of the agglutinating substance and of opsonins. The paper was discussed by Drs. EURICH, ANGUS, LODGE, LANKESTER, WRANGHAM, and HUGHES; and Dr. HONEYBURNE replied.

NORTH OF ENGLAND OBSTETRICAL AND GYNAECOLOGICAL SOCIETY.

AT a meeting held on January 17th, Dr. ARNOLD W. W. LEA, President, in the chair, Dr. H. R. CLARKE (Manchester) showed a case of *Uterine endothelioma* arising from the mucous membrane near the entrance of the left Fallopian tube. Dr. WALLACE (Liverpool) showed lantern slides illustrating three cases of *Chorion-epithelioma*, which he described at the last meeting. Dr. STOOKES (Liverpool) read a paper on *Some points in the puerperal mortality*. For the last ten years the average death-rate from puerperal sepsis had been 1 per cent. in Liverpool, and the average for England and Wales 1.7 per cent. He considered this good result to be due to the high standard set in the examination for midwives originally in Liverpool and now under the regulations of the Central Midwives Board. Dr. M. MORITZ (Manchester) read a paper on *The nature of the so-called ligaments of Mackenrodt*. By means of dissections and drawings he conclusively showed these so-called ligaments to be perivascular tissue surrounding the vessels supplying the uterus, and not separate ligaments.

Reviews.

GYNAECOLOGICAL ANATOMY.

ALTHOUGH pictorial anatomy is not so necessary as it was in days when anatomists and prepared dissections were rare and only to be heard and seen at universities in distant foreign towns, still it has yet its uses. Dr. LIEPMANN has prepared an atlas[1] which is excellent as a collection of anatomical drawings, but will, we must feel, be more resorted to on account of certain matters of deep importance to the gynaecologist. Radical operations, which are really complicated dissections, are largely undertaken for the extirpation of the cancerous uterus and all suspected tissues and structures in its neighbourhood; whilst, on the other hand, the palliative and operative treatment of displacements and prolapse of the pelvic viscera remains quite unsettled. The first question would be solved already were it not for the wholesome dread the operator entertains lest the ureter be wounded or divided, or lest that duct or the bladder itself be stripped of its nutrient vessels, with disastrous results. The surgeon does his duty in making a clean sweep of doubtful surroundings when he extirpates malignant disease of the uterus, but it is now known that the patient, though immune from recurrence, may have her life made miserable by incontinence of urine and ultimately jeopardized by disease advancing up the urinary tract. Liepmann has drawn or caused to be drawn a number of sections of the pelvis and its viscera, hardened by formalin, alcohol, or freezing. The method of preparation in individual or special dissections is explained and will be of service to curators and professional dissectors. The surgeon and gynaecologist will not appreciate the numerous very pretty looking sections across different planes of the pelvis, so familiar in an anatomical atlas, so much as he will value the far more instructive dissections of the pelvic viscera as seen when the subject is placed in the Trendelenburg position. Thus Plates 10 and 11 are just the kind of illustrations which the operator desires and can utilize. They show him what he wants to see and can see when he exposes the pelvic cavity through an incision dividing the abdominal walls, and they explain certain puzzling appearances produced when the surgeon draws the uterus upwards and downwards, or backwards or forwards, or sideways. The full bladder fallen backward in Plate 11 is well worth the surgeon's inspection, and in the preceding plate attention is turned by lettering to the *ligamentum infundibulo-colicum* which Dr. Liepmann distinguishes from the *ligamentum infundibulo-pelvicum* closely related to it. This plate depicts quite graphically an appearance familiar to all who have got through a complicated ovariotomy. Amongst what we may term "the pure sections," Plate 9, made at the level of the cervical canal, is one of the most instructive. The position of the ureters—the bugbear of the operator—is well indicated, as is the *spatium praevesicale mediale*. Some other sections help to teach what the surgeon cannot precisely determine even in the course of a necessarily complicated operation,

The question of displacements is quite different from the surgico-anatomical problems to which we have alluded. When we turn to prolapses all is still obscure. Tandler and Halban, Paramore and other living authorities are not always in agreement. Hence the starting point, which is the musculature, fascia and ligamentous flooring of the pelvis, deserves very close scrutiny, for we cannot understand how the uterus loses, or frees itself

[1] *Atlas der Operations-anatomie und Operations-pathologie der weiblichen Sexualorgane mit besonderer Berucksichtigung des Ureterverlaufes und des Suspensions- und Stützapparates des Uterus.* Von Dr. W. Liepmann. Berlin: A. Hirschwald. 1912. (Pp. 48; Tafeln 35. Mk. 24.)

from, its supports until we thoroughly recognize what these supports may be, and as yet the problem is not thoroughly understood. Liepmann's plates will aid the anatomist in his researches if—much virtue in an "if," as Touchstone says—he takes care to verify the author's conclusions by making, or directing to be made, fresh dissections. The section (Plate 2) of the pelvis of a woman, aged 28, who died during menstruation is interesting; the uterine mucosa is even thicker than might be expected. There are also some good representations of pathological changes.

CUNNINGHAM'S ANATOMY.

In the fifth edition of Professor Cunningham's well-known *Manual of Practical Anatomy*[2]—the first edition which has appeared since his death—Professor Arthur Robinson, his successor in the Chair of Anatomy in Edinburgh, has introduced certain new features, one of which must have far-reaching effects. The anatomists of Great Britain and Ireland have not, up to the present, given their whole-hearted support to what is known as the Basle anatomical nomenclature, a form of international terminology adopted in Basle in 1895 by a committee of anatomists. The idea of the commission originated in and was carried out by members of the *Anatomische Gesellschaft* in Germany, and can be regarded as international only in so far as that society and its affiliations can be so regarded. The reasons for this aloofness are, amongst others: (1) Many of the names recommended are cumbrous; for example, the conjoined tendon masquerades as the *Falx aponeurotica inguinalis*, the external annular ligament as *retinaculum musculorum peronaeorum, superius* and *inferius*, whilst the white line in the pelvis is the *arcus tendineus musculi levatoris ani*. (2) Some terms seem to us most unsuitable; for example, musculo-spiral nerve and groove become the *radial* nerve and groove respectively, whilst the circumflex nerve becomes the *nervus axillaris*. (3) Although the modifications suggested by the new terminology may be followed with advantage in many cases, its consistent use seems, in the words of Professor Piersol, "less in accord with the directness of English scientific literature than the enthusiastic advocates of such adoption have demonstrated." Undoubtedly there is much good in it, and if we could only take this and leave out or modify the recommendations, which even the most ardent supporter of the scheme would admit are not wholly satisfactory, it might receive a warmer welcome here. Be that as it may, Professor Robinson has boldly taken the step, and has adopted the nomenclature throughout. It should be stated, however, "that the labours of the commission were conducted not to ensure the adoption of a Latin terminology in every country, but rather a uniform system of nomenclature, and the abolition of many different terms." In England we may translate these names as seems best to us. Experience has already shown that students who commenced their work at the beginning of the present session, and have used this edition as the guide to their work in the dissecting-room, have found little trouble with the new terms; but for the teachers it is otherwise. And when these same students go across to the wards of the hospital after passing in anatomy and physiology, and use terms with which the physicians and surgeons for the most part have little or no acquaintance, there must necessarily be a period of transition which will be difficult and trying for all concerned. However, with patience and a recognition of the central factor that a system like this can never be forced on either teachers or students, a gradual acceptance of its best and most helpful terms may confidently be anticipated. With regard to the additions and improvements which Professor Robinson has made in the text, we notice that in vol. i the plans of dissection of the axilla, abdomen, and pelvis have either been entirely altered or greatly modified. In vol. ii the alterations are not less numerous and important. They include changes in the method of dissecting the face, tympanum, the posterior triangle, and the deeper parts of the neck. We have already, in a previous notice, commented on the great advantages arising from the alterations in the pelvic dissections. The parts are shown in such a way as the necessities of present-day operative procedure demand, and the same may be said of the dissection of the axilla and the special parts, such as the middle ear. In each case we have nothing but praise for the way in which the various stages of the dissection are described. They are admirably clear and constitute, with some new illustrations, a really valuable addition to the work. Leaving out the question of nomenclature, we take this opportunity of again congratulating Professor Robinson on the various alterations he has made, and there is every indication that the book will continue to hold the unique position which it has attained.

[2] *Manual of Practical Anatomy*. By the late D. J. Cunningham. Fifth edition. Edited by Arthur Robinson, Professor of Anatomy, University of Edinburgh. Two vols. Edinburgh and London: Henry Frowde, and Hodder and Stoughton. 1912. (Cr. 8vo, vol. i, pp. 701, figs. 255; vol. ii, pp. 646, figs. 256. 10s. 6d. per vol. net.)

Although so many books have been written on the bones of the body, another has recently been added to the list by Professor A. Francis Dixon of Dublin. In his *Manual of Human Osteology*[3] Professor Dixon has given an excellent account of the bones, written from an essentially practical standpoint, and illustrated by a fine series of figures, many of them in colour. It is obvious that in preparing both the letterpress and illustrations the greatest care and attention to detail have been displayed, and the volume can be confidently recommended to those who require a handy textbook as a companion to Cunningham's *Practical Anatomy*, issued by the same publishers. The student will find that the description of each independent bone is not too long, and yet is quite sufficient for all ordinary purposes. Special chapters at the end of the book are devoted to the teeth, composition, shape and structure of bones, the development and the epiphyses of bones—a convenient arrangement for reference. With regard to the vexed question of terminology, the author has taken the plunge along with Professor Robinson, and throughout the text has given the names arranged by the Basle Committee. These are printed in black type, whilst the old names appear in italics or in the type used for the text. As this decision is in agreement with that come to by other writers on anatomy whose books have been recently issued from the Oxford University Press, it follows that a considerable number of those who have commenced their medical studies at the beginning of the present winter session must now become familiar with the old and the new terms in anatomical literature—another burden to the already overworked medical student. The many merits of the book will, however, soon be realized by students and practitioners, and we can recommend it to those who are reading for the ordinary qualifying examinations, and also to others who are preparing for the higher examinations, as containing an accurate account of the human skeleton.

[3] *Manual of Human Osteology*. By A. F. Dixon, Professor of Anatomy, Trinity College, Dublin. London: H. Frowde, and Hodder and Stoughton. 1912. (Cr. 8vo, pp. 328, 178 figures, some coloured. 10s. 6d. net.)

CHEMISTRY.

While new textbooks on one branch or another of chemistry appear with great frequency, the number of those which present much new matter or deal with the subject from a new point of view is by no means large. Among the latter a conspicuous place is due to Molinari's *Treatise on General and Industrial Inorganic Chemistry*,[4] an English translation of which, by Dr. E. Feilmann, has just appeared. The work is divided into three parts, headed "General," "Non-metals," and "Metals." The first of these deals in a very thorough manner with the fundamental laws; in this section modern conceptions, such as the principles of thermo-dynamics, the ionic theory, the phase rule, and the known facts as to colloidal solutions, radio activity, and the disintegration of atoms, are given their proper place in the systematic study of the subject; it also includes a historical sketch of chemistry up to the beginning of the modern development of the science, ranging from the ancient Chinese to the work of Lavoisier. In the second and third parts the distinctive feature is the prominence given to industrial processes and statistics of production. Laboratory methods of producing each substance are first given, somewhat briefly and

[4] *Treatise on General and Industrial Inorganic Chemistry*. By Dr. Ettore Molinari. Third revised and amplified Italian edition, translated by Dr. Ernest Feilmann, B.Sc., Ph.D., F.I.C. London: J. and A. Churchill. 1912. (Roy. 8vo, pp. 720; 280 illustrations and 3 plates. 21s. net.)

as a rule without illustrations of ordinary apparatus; its actual uses are mentioned somewhat fully, then the methods by which it is produced industrially, in many cases with illustrations of the plant employed; finally, figures showing the amounts produced in different countries or by different processes are briefly presented. The book is intended principally not for those who are previously quite ignorant of the subject, but for those who have such a general knowledge of chemistry as is now commonly given at a technical institute; for the student who is intending to devote himself to industrial applications of chemistry the information here presented gives the subject a reality and concrete interest which are not imparted by the ordinary textbook, while for the more general student of the subject also its interest is greatly increased. In the numerous cases where rival methods of production dispute the field, it is possible from the descriptions and statistics given to form a fair estimate of their relative importance and advantages. Since the author is an Italian professor of industrial chemistry, prominence is naturally given to the Italian point of view, but the value of the work to students of other nationalities is not appreciably lessened thereby, while many interesting facts as to national progress come under notice. The book occupies an intermediate position between a textbook of inorganic chemistry and an advanced work on chemical technology, and the information given in this third edition is evidently thoroughly up to date. The translation appears to be very well done (though misprints are unfortunately rather numerous), and the book is to be strongly recommended.

Chemical Theory and Calculations,[5] by Messrs. F. J. WILSON and I. M. HEILBRON, is an elementary textbook for chemical students devoted to a portion of the subject which is not always adequately treated in larger works. The atomic theory and methods of determining atomic weights, valency, the theoretical portion of quantitative analysis, and the elements of thermo-chemistry are among the subjects to which chapters are devoted; numerous examples are given of the calculations necessary to be made in connexion with these and with the laws of diffusion of gases, and of the effect on volume of changes of temperature and pressure, etc. The book will be useful, but a student working without assistance might occasionally be puzzled by apparent discrepancies, as, for example, the statement on p. 8 that specific gravities are determined at 20° C. by means of the pyknometer, and on p. 11 that a temperature of 15° C. is taken when the Westphal balance is employed.

The third volume of THORPE'S *Dictionary of Applied Chemistry*,[6] like its predecessors, is characterized by the wide range and comprehensive nature of the information which it contains. The section of the alphabet included in this part is from Gr to Oils. Amongst the matters of interest in medicine which are comprised in this volume are some twenty vegetable drugs dealt with individually, besides many included in the articles on gums, gum-resins, and essential and fixed oils; many medicinal chemicals are discussed under their appropriate headings; while the dietetic articles include the important substances milk, meat extracts, and lecithin, with many others of more restricted interest. It is impossible to turn over the pages without lighting on articles full of value, while for those who require the fullest detailed information on any of the subjects treated the copious references to original papers will be very convenient. The list of contributors to the present volume includes between thirty and forty names, nearly all well known in one department or more of chemical work.

When a textbook has reached its tenth edition it may fairly be supposed to fill its place in a satisfactory manner; the tenth edition of SIMON'S *Manual of Chemistry*[7] shows revision and additions which will ensure that it in no way falls behind its predecessors. Among the matters newly introduced or more fully dealt with than formerly are reversible reactions, osmotic pressure, dissociation, etc.; among new compounds touched on are atoxyl and salvarsan. The distinctive features of the book remain the same, including the use of coloured plates to show the exact colours obtained in many tests, both in the inorganic and organic branches.

Mr. J. W. MELLOR'S *Modern Inorganic Chemistry*[8] is, as its title indicates, an account of that section of chemistry distinguished as inorganic, in which recent work and modern theories are included. The earlier part of the book is chiefly devoted to general laws and theories, and in this part each chapter and often each section is introduced with a quotation from some more or less famous chemist or philosopher; these quotations will perhaps tend sometimes rather to distract than to assist the student, and they are occasionally liable to be misapplied, as, for example, that on p. 56, commending "some boldness and licence in guessing." The author indicates at the outset that he considers it more important to impart an appreciation of method than a mere knowledge of facts; this point of view is fairly obvious throughout the book, which concludes with an "epilogue" and a quotation from Sherlock Holmes! The work might perhaps have been improved had the author exercised greater restraint in the use of quotation, but as it is, it is certainly a very good book.

Dr. EKELEY'S *Laboratory Manual of Inorganic Chemistry*[9] is stated to be written and arranged for use in connexion with Holleman's textbook of inorganic chemistry. It is impossible to discover what merit there can be in the arangement adopted, and not easy even to justify calling it an "arrangement" at all. The book is divided into some three hundred and odd sections, each headed with the name of the substance or subject referred to. The treatment in most cases is meagre; for example, the whole section headed "Fluorine" is called "Experiment 57," but consists merely of two questions: one, "Draw a diagram of Moissan's apparatus"; and the other, "State the physical and chemical properties of fluorine." The section headed "Volumetric Analysis" occupies half a page, and that headed "Thermochemistry" a third of a page; these two are sandwiched between "Sodium Thiosulphate" and "Nitrogen."

HARELIP AND CLEFT PALATE.

ONE of the most striking demonstrations before the Surgical Section of the Annual Meeting of the Association at Birmingham in 1911 was Mr. James Berry's account of his results in the operation for cleft palate. Those present were impressed by two features in the cases shown—the admirable reconstruction of the palate and the excellence of the voice production. In the paper read at the meeting Mr. Berry strongly advocated the claims of what is now the old operation, or properly, the Langenbeck operation, and he maintained that the results obtained with other operations, ingenious and indeed audacious as these mostly were, were not comparable with those achieved by the Langenbeck method. In a volume on *Harelip and Cleft Palate*,[10] Mr. BERRY and his colleague Mr. LEGG have very fully set out the whole anatomical and developmental story of these deformities, and have given in elaborate detail the various operative procedures for treatment and their results. On the question of the proper time to operate the advice is that closure of harelip should be done when the child is about a month or 6 weeks old, provided that the infant is other-

[5] *Chemical Theory and Calculations.* An elementary textbook by Forsyth James Wilson, D.Sc.Edin., Ph.D.Leipzig, and Isidor M. Heilbron, Ph.D.Leipzig, F.I.C., A.R.T.C. London: Constable and Co., Limited. 1912. (Crown 8vo, pp 138; figs. 9. 2s. 6d. net.)

[6] *A Dictionary of Applied Chemistry.* By Sir Edward Thorpe, C.B., LL.D., F.R.S. Revised and enlarged edition. In five volumes. Vol. iii, Gr to Oils. London: Longmans, Green and Co. 1912. (Medium 8vo, pp. 797. £2 5s. net per vol.)

[7] *Manual of Chemistry.* By W Simon, Ph.D., M.D., and Daniel Base, Ph.D. Tenth edition, thoroughly revised. London: Baillière, Tindall, and Cox. 1912. (Roy. 8vo, pp. 774; 82 illustrations and 9 coloured plates. 15s. net.)

[8] *Modern Inorganic Chemistry.* By J. W. Mellor, D.Sc. London: Longmans, Green and Co. 1912. (Demy 8vo, pp. 891; 316 illustrations. 7s. 6d.)

[9] *A Laboratory Manual of Inorganic Chemistry.* By John B. Ekeley, Ph.D., Sc.D. New York: John Wiley and Sons; London: Chapman and Hall, Ltd. 1912 (Cr. 8vo, pp. 136; figs. 46. 4s. 6d. net.)

[10] *Harelip and Cleft Palate, with Special Reference to the Operative Treatment and its Results.* By James Berry, B.S.Lond., F.R.C.S., Senior Surgeon to the Royal Free Hospital, Consulting Surgeon to the Alexandra Hospital for Children with Hip Disease; and T Percy Legg, M.S.Lond., F.R.C.S., Surgeon to the Royal Free Hospital, Assistant Surgeon to King's College Hospital. London: J. and A. Churchill. 1912. (Med. 8vo, pp. 340; 242 figs. and appendix of cases of operation for cleft palate. 12s. 6d. net.)

wise healthy. Generally speaking, the sooner the operation is done the better, even (in the case of exceptionally robust children) within the first few days of life. In regard to the palate operation, we find in the second appendix, containing notes of Mr. Berry's 154 consecutive cases, that 20 cases were operated on under 2 years, 50 from 2 to 4 years, 30 from 4 to 8 years, 35 from 8 to 12 years; so that here also no fixed age limit for operation is made.

The authors are strongly in favour of performing the harelip operation before the cleft palate operation, for the reason chiefly that a remarkable degree of spontaneous closure of the cleft, especially the alveolar portion of it, follows the harelip operation. The details of operation for both deformities are extraordinarily, but not unnecessarily, full. We agree with the authors that no operations in the whole range of surgery will better repay attention to minute detail. Gentleness of handling of the tissues is of prime importance; roughness in sponging or in cutting will materially interfere with the nutrition of flaps. The authors accordingly recommend that in cleft palate operations the paring of the edges should be left till after the separation of the muco-periosteal flaps. The most difficult clefts to close satisfactorily are the incomplete wide median clefts which stop short of the incisor teeth, the alveolar arch being normal. These clefts are often very wide and have a broad, rounded, anterior extremity, which is difficult to deal with.

This is an altogether admirable monograph. It is commendable for its clearness, for its ample details, and for its wealth of illustration. It should appeal at once to any surgeon within whose sphere of work these cases come, and mostly to the young surgeon who may be tempted to think that the new ingenious operations are the best, for the work is at once a defence of the Langenbeck or Smith operation and an exposition of what that operation can accomplish.

NOTES ON BOOKS.

AMONGST all those who dabble in eugenics and pin their faith to the doctrine of heredity, none has adopted the most advanced theories more readily than the novelists who find the creed of the eugenists a convenient peg on which to hang a story. This belief in the transmission of hereditary qualities from parent to child, irrespective of training and environment, is the *Leit-motif* of Mr. RICHARD WASHBURN CHILD'S recent novel, *The Blue Wall*,[1] in which the daughter of a drunken libertine, brought up from infancy in the most favourable surroundings, suddenly develops an irresistible craving for strong drink. Her gallant struggle for self-mastery and the extraordinary effect that her mental sufferings have upon all who approach her form the subject of a curious story, the enjoyment of which is only spoilt by the confusion of the narrative. The circumstances leading up to and attending poor Julianna's despairing efforts to overcome her "vice of blood" are minutely described by four or five different persons, and the result is a bewildering medley of incident in which the main plot is occasionally lost sight of or forgotten. To make confusion worse confounded, the reader in the end is left in a state of doubt as to the heroine's real parentage, and consequently as to whether her predisposition to vice is inherited from the degenerate Cranch or is merely the result of suggestion. But his curiosity is piqued and stimulated by the skilfully accumulated "ruin on ruin, rout on rout." The book is gaily bound and contains several illustrations by Mr. E. Coles Phillips and Mr. Harold J. Cue.

Dr. G. FRANK LYDSTON is well known on the other side of the Atlantic as the author of several books in which he has advocated the sterilization of the unfit as the only effectual means of checking the present alarming increase of crime and degeneracy, and breeding a race of sane and healthy men and women. His latest work, a play in four acts, called *The Blood of the Fathers*,[2] has been written with the intention of arousing the lay public to a fuller sense of the danger in which it stands, and might serve as a modern illustration of the old text which has warned countless generations of unheeding mankind, that the sins of the fathers will be visited upon their children. The plot of the play is very simple. It is merely the unhappy love story of a rising young doctor who, against his better judgement, risks a marriage with the beautiful daughter of a notorious criminal, and lives to repent it. The style and phraseology are intensely American, and the comic relief afforded by Allyn's Japanese valet and his wife's cockney maidservant appears at times (at least to English ears) to be a little forced and crude; but no thoughtful reader can fail to be struck by the justice of the author's opinions, and the outspoken courage with which he expresses them. In his preface Dr. Lydston tells us that he has adopted his present method of propaganda because "dramatic form is most effective in driving home a social lesson." Those of his readers who share his apprehensions concerning the future welfare of their fellow men, and with him desire to secure for the generations yet unborn the health and sanity which ought to be the birthright of every human being, can only hope that the good seed may not fall on barren soil, and that the solemn warning conveyed by the play may not have been uttered in vain.

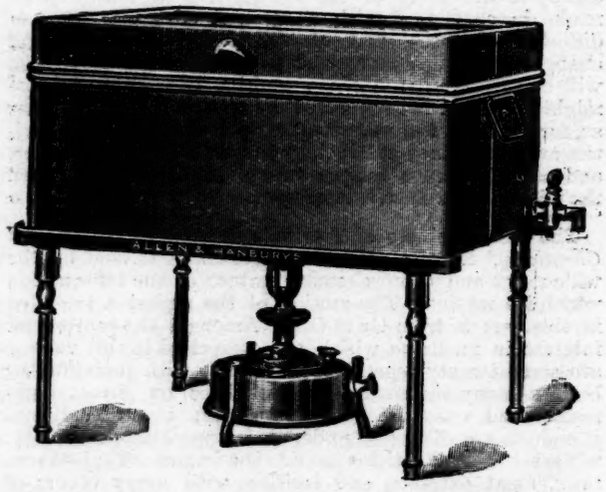
[1] *The Blue Wall.* By Richard Washburn Child. A Story of Strangeness and Struggle. Illustrated by E. Coles Phillips and Harold J. Cue. London: Constable and Co., Ltd.; Boston and New York: Houghton Mifflin Co. 1912. (Cr. 8vo, pp. 386. Price 6s.)

[2] *The Blood of the Fathers.* A Play in Four Acts. By G. Frank Lydston. Chicago: Riverton Press. 1912. (Post 8vo, pp. 241. Price $1.25, cloth; $2.25 edition de luxe.) (Sold by subscription only.)

MEDICAL AND SURGICAL APPLIANCES.

A Sterilizer.

MR. C. A. STIDSTON (Wolverhampton) writes: The following are the details of a sterilizer which I have designed for operations in private houses. With the exception of caps, gowns, and dry towels, which are taken already dry-sterilized in drums, everything connected with an operation can be sterilized in the operating room independently of any source of heat in the house. The sterilizer is of copper, and is 14½ in. long, 12 in. wide, and 7 in. deep. Inside it are packed: (1) a collapsible stand; (2) a nest of two circular copper bowls, 7¼ in. by 3½ in.; (3) instrument cage, 11½ in. by 3½ in. by 3¼ in.; (4) a needle box; (5) a glove box; (6) a number of towels; (7) swabs, sponges, ligatures, drainage tubes; (8) ligature tray, 10½ in. by 1¼ in. by 1 in.; (9) a picnic "Primus" lamp in tin 6 in. by 4 in. by 8 in., inside which are tins of paraffin and methylated spirits, spares, and all fittings; (10) instruments and dressings. In the back lower corner of one side is a



hole into which screws (1) a block stop, or (2) a tap. By means of the tap the water or lotion (I use weak lysol) contained in the sterilizer can be run off into instrument and ligature trays, into bowls for hands and gloves, etc., into a douche can, etc. The sterilizer may be boiled on a gas range or coal fire, but with the "Primus" lamp (especially added to dispense with the uncertainty of reliable heat being found at the house) 16 pints of water can be brought to the boil in 30 minutes. The sterilizer will hold midwifery forceps and the largest instruments, and is large enough to contain accessories. By a skewer joint the cover is removed, inverted, and acts as an instrument tray. Messrs. Allen and Hanburys are the makers.

AT the annual meeting of the National Dental Hospital for London it was stated that considerable improvements had been effected, but that the funds in hand were not sufficient to complete the equipment. The proposed arrangements for amalgamation with a general hospital had been suspended at the request of the Board of Education until the issue of the report of the Royal Commission on University Education in London.

MEDICAL SERVICE IN THE HIGHLANDS AND ISLANDS OF SCOTLAND.

(Continued from page 129.)

IN an appendix to the report of the Committee on the Medical Service in the Highlands and Islands, Dr. Leslie Mackenzie, Medical Member of the Local Government Board for Scotland, deals with a scheme for the administrative consolidation of medical service.

This appendix is analysed below. It contains many valuable suggestions as to the appointment of a central authority for the administration of medical services in the Highlands and Islands.

INTRODUCTION.

The Committee's remit contains the words: "To advise as to the best method of securing a satisfactory medical service therein, regard being had to the duties and responsibilities of the public authorities operating in such district." Dr. Mackenzie points out that if such a grant is to result in the establishing of a "satisfactory medical service," it is essential that the existing medical services shall be consolidated and a large number of statutes affecting the health of the country as a whole readjusted. As the Committee is concerned only with the Highlands and Islands, the present seems a favourable occasion for the framing of a scheme to show how far, through the instrumentality of a grant, it is possible to bring about an administrative consolidation of existing services. Such an administrative consolidation would result in increasing the efficiency and developing the resources of the present services, in demonstrating what additional service is necessary, and in preparing the way for any legislation afterwards found to be expedient.

There are several factors in the problem: The smallness of the unit area of administration of parish medical service, the economic deficiencies of particular districts, the geographical difficulties of transit, the conflicting interests of local administrative authorities, the insufficiency of general and special hospital service, the inadequacy and imperfect organization of general and special nursing services, the economic difficulties of private medical practice, the comparative absence of specialized medical practice. To show how some of these difficulties and defects may be overcome it is necessary to enter with some detail into the statutory constitutions and obligations of the existing medical services, to indicate some statutory resources that are still undeveloped, and to show how the public services, once properly correlated, may become the basis for a more adequate system of private medical practice. A primary point to consider is the relation of the public medical services to private medical service; for it may here be said at once that, over large areas of the Highlands and Islands, private medical practice on the ordinary lines is a demonstrated failure. Large numbers of sick people go untreated; yet the doctors cannot make a living.

THE MEDICAL SERVICES.

The medical services here to be discussed may be classified as follows:

1. Poor Law Medical Service.
2. Old Age Pension Medical Service.
3. Local Lunacy Medical Service.
4. Vaccination Medical Service.
5. Public Medical Service.
6. School Medical Service.
7. Maternity Medical Service.
8. National Health Insurance Medical Service.
9. Factory Medical Service.
10. Post Office Medical Service.
11. Nursing Service.
12. Private Medical Practice, including the club system, fee-paying practice, etc.

Poor Law Medical Service.

At present the following medical services, though not all under the Poor Law Acts, and therefore not all affecting the registered poor as such, are, nevertheless, carried out by the Poor Law authority, namely, the parish council:

A. Medical attendance on the registered poor in poorhouses or outdoor.
B. Medical attendance on old age pensioners.
C. Medical attendance on pauper lunatics.
D. Vaccination of defaulters.
E. Attendance, nursing or other, on paupers in poorhouses and also on outdoor paupers and pauper lunatics.

The salary of the parish medical officer must be approved by the Local Government Board, who determine what proportion of the salary shall rank for the medical relief grant. This grant amounts to £20,000 for the whole of Scotland. A first charge on it is made for trained sick nursing in poorhouses; the remainder is distributed as a subvention in aid of the medical officer's salary. This subvention at present amounts to about 4s. 3d. per £. No part of the grant is available for the nursing of outdoor paupers, or for lay attendance on paupers or pauper lunatics. The fact that trained sick nursing *in poorhouses* is a first charge on the grant affects unfavourably the Highlands and Islands districts; for in those districts the vast majority of the registered poor are on the outdoor roll; only a small minority are in the poorhouses. It follows that, although the proportion of poor is large, the proportion of the medical relief grant is small. In the memorandum prepared by Mr. Maxwell, Secretary to the Local Government Board, full details are given as to the inequitable incidence and operation of this grant.

In order to obtain medical officers to discharge these functions, the parish councils have been obliged to offer salaries sufficient to induce men to reside in localities not otherwise likely to attract a private medical practitioner. Consequently, the salaries, compared with the salaries given elsewhere in Scotland, are, in the Highlands and Islands, very frequently out of proportion to the number of paupers and pauper lunatics that have to be medically attended. The incidental result is that the poor rate, supplemented by the medical relief grant, bears to a considerable extent the burden of a "free" medical service; for it is a common understanding that the medical practitioner appointed as parish medical officer shall attend non-paupers at reduced fees. Frequently, indeed, the parish medical officer attends poor but non-pauper residents without any prospect of obtaining a fee. In the Highlands and Islands that is an extremely common practice.

Old Age Pension Medical Service.

As indicated above, the parish medical officer attends on old age pensioners. This is because the majority of old age pensioners in the Highlands and Islands districts cannot afford the expense of a private medical attendant, and they are not disqualified by receipt of medical relief, even when administered under the Poor Law.

The medical attendance on old age pensioners does not amount to a separate service, but it illustrates very pointedly the power of the Poor Law to administer medical relief without involving the recipient in any disqualification either as to his pension or as to certain rights of voting. What applies to old age pensioners applies equally to all others in need of medical relief alone. But it must be said that the medical attendance on old age pensioners does not constitute a serious item at present in the work of the parish medical officers. In some cases the medical officer had never been called to an old age pensioner, although there were many in the parish. Probably the failure to call the doctor is in many cases due to ignorance of the legal right. But, apart from the Poor Law, there is no provision for medical attendance on old age pensioners, and, as they are presumably unable to afford ordinary medical fees, they may in many instances go without medical attendance, even when they require it. The medical officer of the parish is not specially paid for his attendance on old age pensioners, and in one case brought before the notice of the Committee the medical officer himself had to provide any drugs prescribed for such pensioners. This he had to do in every case where application for medical relief had not been made through the inspector of poor in the regular way. This is not a satisfactory state of affairs. The attendance on old age pensioners, who are a special class, ought to be paid separately, and no medical officer should have to pay out of his own pocket for the drugs prescribed.

Local Lunacy Medical Service.

Although the pauper lunatics are attended by the parish medical officer, the Lunacy Medical Service is distinct from the Poor Law Medical Service. The treatment of lunatics, both in poorhouse lunacy wards and in private houses, is supervised by the General Board of Lunacy, who control both parish and other asylums. The local lunacy boards are distinct from the parish councils. It is, there-

fore, important to note that the Lunacy Medical Service is a distinct medical service. In the Highlands and Islands the proportion of lunatics is larger than in many other parts of Scotland, and consequently the cost of the treatment of lunacy is a heavy burden on local rates. It has, on more than one occasion, been suggested that the treatment of lunacy should be entirely met from Imperial funds. If this were done, one serious burden on the Highlands and Islands would be removed. In any claim for an Imperial grant to increase the adequacy of the medical service in the Highlands and Islands, the cost of lunacy may legitimately be emphasized. In several localities it was pointed out to the Committee that lunacy was the most expensive item in the whole medical service. To a certain extent this burden has been relieved in the western islands by the use of the two poorhouses (Stornoway and Lochmaddy) for the accommodation of suitable cases of lunacy. The local lunacy medical service should be paid for on a more adequate scale than at present.

Vaccination Medical Service.

Under the Vaccination Acts the parish council is charged with the duty of vaccinating defaulters, and taking all legal proceedings necessary for the purpose. There is no system of public vaccination as in England. In Scotland vaccination is normally a private medical service rendered by a practitioner to his patient, and paid for by the patient. Only when a child's guardian becomes a defaulter is the child vaccinated at the public expense. In many of the Highland and Island parishes practically all the guardians of infants become defaulters, and thus have their children vaccinated at the expense of the poor rate. There is no grant to assist parishes in the execution of the Vaccination Acts. It may be added that the fee for vaccination acts as a deterrent.

A Vaccination Medical Service is also provided for under the Public Health (Scotland) Act, 1897, which authorizes the local authority for public health to defray the cost of vaccination and revaccination. This power, however, is permissive. In the Highlands and Islands vaccination is entirely carried through by the parish councils, except occasionally, when there is a small-pox outbreak or a small-pox "scare." Vaccination is then offered freely by the public health authorities. It has been suggested that the work of vaccination should be a statutory obligation on the local authority for public health, which is the authority directly interested in the prevention of small-pox. This authority may at any time defray the cost of vaccination and revaccination, but it cannot be placed under obligation to carry out the Vaccination Acts until those Acts are amended.

The operation of the Vaccination (Scotland) Act, 1907, has largely converted compulsory vaccination into voluntary vaccination; and as voluntary vaccination is provided for under the Public Health Act, it is from the public health authority that any future improvement in the Vaccination Medical Service is to be expected.

Public Medical Service.

(a) Hospitals, Convalescent Homes, and Reception Houses.

The Public Health Medical Service is concerned with all conditions affecting the health of the community, and, in particular, with the isolation and treatment of all infectious diseases. For these purposes the public health authorities are under obligation to appoint medical officers of health and sanitary inspectors. They may also be required by the Board, and in practically all cases have been required, to provide hospitals, temporary or permanent or portable, for persons suffering from infectious disease, with the nursing services incidentally necessary. They have also power and may be required to provide reception houses for persons convalescent from infectious diseases; but, although in many cases eminently desirable, these reception houses have nowhere been provided in the Highlands and Islands. Further, they may be required to provide reception houses for persons who may have been exposed to infectious disease. Such houses, however, have nowhere been provided in the Highlands and Islands. Hitherto the hospital accommodation provided has tended to the minimum necessary for the isolation and treatment of a proportion of the persons affected by the most serious infections. (These obligations are contained in Section 66 of the Public Health (Scotland) Act, 1897.)

In many localities, however, the provision even of hospitals has been found so difficult, on account of the poverty or the geographical conditions of the area, that, even for the major infections, no hospital at all is available. These localities are undoubtedly the exception; but the economic conditions are frequently such that the rates would be grossly overburdened if adequate provision of hospitals, convalescent homes, and reception houses were rigidly enforced. This is an item that may legitimately be pressed in the claim for an additional Imperial grant.

(b) Domiciliary Medical and Nursing Service.

Under the same section (66) the Public Health Authority, with the consent of the Local Government Board, may also, either instead of providing such hospitals or houses, or in addition to such provision, employ nurses to attend persons suffering from infectious disease in their own houses, and may also supply medicines and medical attendance for such sick. In several localities in the Highlands this power has been employed. One or two public health authorities in the Highlands have appointed nurses to attend patients in their homes; but the comprehensive powers of domiciliary treatment conferred by the Act have not been developed to any considerable extent. This, no doubt, is largely due to the expense involved both in the provision and in the housing of trained nurses. All over the Highlands the Committee has been confronted with the difficulty of housing nurses and doctors. In some cases, too, the public health rate has approached or reached its statutory maximum—namely, 1s. per £. In those cases no adequate provision, either of hospitals or of nursing, is possible without Imperial assistance. At the same time, probably the failure to provide nursing may fairly be assigned in part to the inadequate appreciation of the need for nursing. Frequently epidemic diseases—such as measles, whooping-cough, scarlet fever, or diphtheria, typhoid, and even typhus fever—are allowed to run riot until the number of immediately susceptible persons is exhausted. In many localities the nursing provided is quite inadequate for epidemic work; but there is evidence that the need for domiciliary nursing is being better appreciated.

It may here be added that in a great many localities the houses are quite unsuited for the isolation and treatment of any infectious disease (including tuberculosis). It follows that any system of home nursing for infectious diseases must remain more or less abortive. Yet, in the large epidemics that occasionally occur, particularly among children, nursing at home is an essential adjunct of any public medical service.

Hitherto only one or two local authorities have made any fixed arrangements with medical practitioners for attendance on infectious patients at their own homes. This, however, is clearly a competent arrangement under the section, and as the public health authorities are responsible for the management of all infectious diseases, that may legitimately be urged to develop the domiciliary medical treatment of infectious cases where no other arrangement is, for the time being, practicable. In the evidence placed before the Committee several cases were mentioned where the local medical practitioner had to attend, on behalf of the local authority, a large number of infectious cases—such as persons suffering from diphtheria and typhoid fever; but in most localities such attendance was regarded merely as an ordinary part of the duty of the general practitioner to his patients, and was not paid for by the local authority.

The term "infectious disease" in this section includes tuberculosis, whether the disease be compulsorily notifiable or not. The Local Government Board in reports and circulars have indicated their view that the Public Health Act is applicable to tuberculosis as to other forms of infectious disease. In particular they have issued an order requiring the notification of the pulmonary forms of tuberculosis. It is therefore open to the local authority for public health to provide for the domiciliary treatment of tuberculosis, and this has been indicated in a circular recently issued by the Board (P.H., XVII, 1912).

The powers conferred by this section (66) of the Public Health (Scotland) Act, 1897, are, therefore, of the greatest

practical importance in the Highlands and Islands, where hospital accommodation is, for geographical reasons, frequently difficult to establish; where, as in some of the islands, the housing is particularly defective and insanitary; where, too, the population is frequently very much congested. No doubt the occurrence of tuberculosis is largely a problem of housing; but, pending the improvement of housing, there is abundant need for an extension of the domiciliary medical and nursing systems. Illustrations could be taken from almost any part of the Highlands and Islands.

Generally it may be said that in the Highlands and Islands the powers of hospital provision, convalescent home provision, and provision for patients that have been exposed to infection, have not been developed to anything like their full extent, nor has adequate attention been concentrated on the possibilities of medical attendance and nursing at home. Probably, if additional assistance from Imperial grants were available, medical and nursing service for infectious disease, including tuberculosis, could be made immensely more adequate. A nursing service developed under these powers would also cover a large part of the cases emerging from the medical inspection of school children, who, as is well known, suffer in considerable numbers from diseases such as ringworm, impetigo, and other infectious diseases, not to speak of infectious eye diseases, septic catarrh of the ear, and septic conditions of the throat. The amount of money available from the public health rate and the Imperial funds might thus become a substantial basis for a nursing system that could be readily extended to non-infectious cases. There seems to be no sound reason why a nursing system established by a district committee (that is, the local authority for public health) should not be consolidated with any nursing system established under a parish council. If the various moneys available were funded, there is no reason why the nursing work of a whole district should not be so arranged as to suit the purposes of every parish within the district. Such a system would be at once more economical and more efficient than the scattered and sporadic efforts at present made to deal with individual cases.

(c) *Control of Non-infectious Endemic or Epidemic Diseases.*

By Section 78 of the Public Health (Scotland) Act, 1897,

> The Board may from time to time make, alter, and revoke such regulations as to the said Board may seem fit, with a view to the treatment of persons affected with any epidemic, endemic, or infectious disease, and preventing the spread of such disease . . . and may declare by what authority or authorities such regulations shall be enforced and executed.

It is under this section that the recent order for the compulsory notification of pulmonary tuberculosis was issued. If it be held that the terms "epidemic" and "endemic" are to be read as alternatives to the term "infectious disease" it will at once be clear that the powers of this section may cover a number of serious and widespread diseases, infectious and non-infectious. Among the diseases that might be dealt with in such an order are hydatid disease, which is common in Shetland; croupous pneumonia, which is common everywhere; and the malignant diseases (including cancer), which at present cannot receive in the Highlands and Islands the same medical attention they receive even in small towns. It need hardly be said, however, that any serious extension of the present obligations of the public health authorities along those lines could not be contemplated without additional assistance from Imperial funds.

(d) *Cleansing and Disinfection of Houses and Clothing.*

Under the Public Health Act also there are abundant powers for the cleansing and disinfection of houses, for the cleansing and disinfection of clothes, for the transport of patients to and from hospital. In the direction and execution of such work an adequate service of nursing might be developed with the greatest social profit. Over and over again the Committee has had impressed upon it the value of trained nurses in educating the inhabitants in the maintenance of cleanliness, both of house and of person. Amongst the many incidental benefits from a public nursing system this is undoubtedly one of the greatest. Such educative direction subserves in no small degree the primary purposes of the Public Health Act.

(e) *Ambulance Service.*

Further, if it be legitimate to take the larger view of the terms "epidemic" and "endemic" disease, the development of the public health ambulance system might readily dovetail into any ambulance system that was found to be necessary for the removal of cases of general sickness. This would bring the transit of patients either to large distant hospitals or small local hospitals into relation with the public health service of the area. At present patients are removed to hospitals in carts or other conveyances, without any consideration for the nature of the illness or the danger to the patient. The damage to patients must from time to time be considerable. At any rate it is eminently desirable that some regular system of ambulance should be established, and one ambulance could serve for a very large area. The ambulance associations in the thickly-populated centres of Scotland do an enormous amount of good work in this connexion, and if there were proper organization of nursing and medical service, those associations might find for their ambulances a fairly continuous use in the Highlands and Islands. It does seem unsatisfactory that every public health authority should have to provide for the removal to hospital of cases of infectious fever, while a case of pneumonia, or acute rheumatism, or Bright's disease, or heart disease, should have to rely on any chance vehicle that the individual himself may find available in the locality. For insured persons and dependants, cost of removal to or from sanatoriums or other institutions may be defrayed out of the sums available for sanatorium treatment.

This, however, is offered only as one of many possible illustrations of the uses that might be made of the powers of the public health service to provide the mechanism to assist the organization of general treatment and the management of hospitals of every variety.

(f) *Pathological Service, including Bacteriological Examinations, etc.*

As a pathological service is an essential part of any adequate medical service, it is important to consider how far such a special service can be provided. Already all local authorities for public health have the power to provide for the bacteriological examinations of cases of infectious disease—tuberculosis in all its forms, diphtheria, enteric fever, etc. These powers include the full pathological investigation of all such diseases. Most of the Scottish local authorities have already made arrangements for the most urgent parts of this work, and some local authorities have special laboratories of their own. Such arrangements might, without any difficulty, include such work as the diagnosis of tuberculous cases by tuberculin, the technical direction of tuberculin treatment or other similar treatment, the preparation of special vaccines, and the like. With very little additional outlay a full system of pathological assistance and consultation could be instituted. This would be an eminently suitable subject for a subsidy from any additional grants contemplated.

School Medical Service.

This medical service has been organized under the powers of the Education (Scotland) Act, 1908.

The School Medical Service will soon be, where it is not already, supported by a system of school nurses, whose first duty will be the "following up" of the cases discovered at the medical inspection. The nurse will thus come to act as a most important intermediary between the school medical officer, the parent, and the parent's family attendant. In the evidence placed before the Committee it was made abundantly clear that hitherto the number of children brought by the parent to the medical practitioner is very small relatively to the numbers needing treatment and notified to the parent by the school officer. There is here an important gap to be filled if the School Medical Service is to be made efficient. This gap can be filled by the school nurse, who, at the instance of the school medical officer, would "follow up" the case in the home, and, under the direction of the medical practitioner, would carry out the treatment prescribed.

Recently a grant has been given by the Scottish Education Department to such school boards as have asked for it to

enable them to ensure that medical treatment is provided for "necessitous" children. A certain portion of this money might well be spent in securing the assistance of the local medical practitioners for the treatment of such ailments as they might properly undertake to treat or do habitually treat. The school nurse would normally superintend or carry out the treatment prescribed by the medical man in charge. But such a nurse would in many localities have time to do nursing work for the parish or the public health authority, or the Insurance Committee. There is here, therefore, opened another line of possible organization of nursing and medical service.

Where the districts are sparsely populated, and where a concentration of nursing and treatment work is readily accomplished, it would be a waste of money and energy for each *ad hoc* authority to provide its own nurses. The "following up" of school cases might easily be fitted into the treatment of such cases and adapted to the other nursing work of a district.

Maternity Medical Service.

In the course of the Committee's investigations nothing has been more striking than the casual nature of medical service in regard to birth and infancy. The medical practitioners in their returns indicate that they are summoned in a considerable percentage of confinements, but the greater percentage of confinements almost everywhere is left to the charge of trained nurses, partially trained midwives, or totally untrained women. In some localities that are difficult of access, or far from a doctor, births take place either without any assistance whatever or with such assistance as the husband or other person can render on emergency. The evidence shows that only a small number of cases are attended even by trained nurses; the majority are attended by the partially trained midwives or by unskilled persons. In almost no locality, however, is there any definite understanding between trained nurses, midwives, unskilled persons, and local doctor. The doctor, no doubt, is often summoned in difficulties, but that is accidental. There is no obligation of any kind on any midwife, trained or untrained, to summon a doctor; there is no notification of births; there is no registration of midwives; there is, in a word, no systematic relation between doctor and maternity nurses. This is true with very few exceptions.

From no standpoint can this chaos of casual practice be regarded as an adequate medical service. Apart, however, from the obvious want of system or mutual understanding, the damage done by the unskilled management of confinements is known to be considerable. Where practice is so casual precise information is naturally very difficult to obtain, but the Committee has had abundant indications of the injury done to individual mothers by the unsuperintended and undirected practice of partially skilled or unskilled women.

The Midwives Registration Act does not apply to Scotland. Consequently, midwives of any grade of qualification may practise absolutely without supervision by any medical man or by any other external authority. In none of the country districts visited has the Notification of Births Act been applied by the local authority. The result is that the attendant at a birth is not brought into official connexion with the health authority. The Act has been adopted in the town of Inverness.

As a first step towards the remedy of this entirely indefensible condition of practice, two things may be suggested: (1) That the bill recently before Parliament for the registration of Scottish midwives should be passed into law at as early a date as possible; (2) that the local authorities should be requested to apply the Notification of Births Act over their whole area.

The medical and nursing care of infancy from the first year to school age is, as nearly everywhere else in Britain, entirely unprovided for as such. It is left simply to the accident of parental solicitude and the availability of a doctor. There is evidence that among these infants bronchitis and catarrhal pneumonia are common, as is to be expected from the conditions of the housing. The perpetual inhalation of peat smoke, whatever other results it may have, may fairly be set down as a contributing cause of bronchitis and pneumonia in infancy. Indirectly it may thus increase the predisposition to tuberculosis. Further, the proved inadequacy of the milk supply in various localities is a cause of malnutrition, and there was much other evidence that in some of the poorer localities the infants of 1 to 5 years, no less than those of later age, failed to receive their fair share of nourishment. In order, therefore, to bring birth and infancy into line with the services already enumerated, it is eminently desirable first to establish the notification of births, and thereafter to encourage the appointment of skilled health visitors. Both duties fall to the local authority for public health.

In any claim for an additional Imperial grant the care and management of birth and infancy ought to receive a very prominent place. Under the existing law the whole cost, both of the notification of births and of all health visitors, would fall on the public health rate of the district.

Insurance Medical Service.

Whatever medical service is ultimately organized under the National Health Insurance Act, it is certain that at many points it will come into contact with, or overlap, the existing medical services. To prevent overlapping and waste of energy and money it is essential that the Insurance Medical Service should be adjusted to the others. This can be readily done. Whether the work be carried out by the panel system or by whole-time officers, the same medical man will frequently be in a position to undertake the treatment necessary under the Insurance Act, the Poor Law Acts, Public Health Acts, the Education Acts, and the Factory Acts. It ought to be a simple matter to arrange, through the local body afterwards suggested, that the attendance of insured persons, like the attendance on the poor and the school children, shall be made a functional part of a single medical service on the lines already indicated. There is nothing in the special work likely to be required of a medical man under the Insurance Act that should in any way militate against an administrative consolidation of this and the other medical services. On the contrary, the same family may contain a sick insured person, a sick poor person, a sick old-age pensioner, a sick infectious person, a sick school child, and a sick lunatic—each entitled to medical attendance under a special statute.

In the same way, any nursing service established under the Insurance Act could be worked into a system with other nursing services.

Factory Medical Service.

Under the Factory and Workshop Acts there are two chief medical services: First, the Public Health Service, acting through the medical officer of health, who has certain duties in relation to factories and workshops, workplaces, bakehouses, etc.; secondly, the service of certifying surgeons concerned with the personal certification of the workers. Where there is no certifying surgeon for a factory or workshop, the Poor Law medical officer for the district acts for the time being as the certifying surgeon. This is another instance in which unification might be desirable. Factories are not numerous in the Highlands, but workshops and workplaces are. The work of medical inspection of workshops and workplaces normally falls to the medical officer of health. The work of certifying falls to the medical practitioner. As in so many other public health functions, so here—the service of the local medical practitioner might very well be utilized as part of the public health service.

Post Office Medical Service.

Like the certifying surgeoncies, the Post Office medical officerships are under the patronage of the central department. In the Highlands and Islands the money value of the service does not amount to much, except, perhaps, in some of the towns. Like the factory service, however, the Post Office is mentioned as a type of a medical service under the direct control of a central department, yet carried on by a local practitioner who may have many other official duties.

Nursing Service.

Any voluntary association capable of providing a service of trained nurses might well be assisted by contributions,

both from the local authorities and Imperial funds. To a certain extent this is already done, as parishes contribute to the associations, but there is room for organization and development. Thus, if a county nursing association were established on a voluntary basis it would be systematically subsidized either by annual contributions or by payments for work done. In none of the public medical services enumerated is there anything to prevent organization of such nurses into various grades, according to the predominant requirements of the district.

Private Medical Practice.

(*a*) *Relation of Private Practice to Official Services.*

All over Scotland private medical practice is frequently bound up in greater or less degree on one or several official services—for example, the parochial medical service, the public health service. In the Highlands and Islands this is more strikingly the case; for, as the evidence everywhere shows, the great mass of practitioners reckon the income from public service as an important factor in their practice. In some cases the whole income amounts to little more than the subsidy from the official services. In a large proportion of the parishes no medical practitioner can live on the income obtainable from private practice alone. The principle, therefore, of securing to the doctor an official income sufficient to induce him to practise in the locality is already everywhere accepted. In the argument here set forth it is proposed to do two things: first, to relate the local practitioner in an official capacity to as many public services as possible, thereby extending the financial basis for a living practice; second, by a correlation of services to develop and extend the medical activities of the public authorities.

(*b*) *Club System.*

If the club system were to be made a substantial basis for the better organization of medical services it would have to be compulsory; this would involve legislation. As, however, the purpose of the suggested scheme is to ascertain what can be done without legislation, the club system is considered solely from the standpoint of administrative consolidation of services as distinct from legislative consolidation. It is believed that the club system might in certain localities be developed on a voluntary basis if an Imperial grant in aid of local contributions were made available—that is to say, if an association in any locality raised a certain sum, an equivalent sum mght be contributed from the grant.

(*c*) *System of Official Subsidy with Low Fees.*

It seems reasonable to conclude that in many localities within the area the private practitioner, if he is to perform effectively his multiform duties to the community, must have a minimum official salary assured to him from public services.

But a satisfactory medical service does not consist of general practitioners alone. No hospital medical service is complete without its staff of nurses, wardmaids, and other administrative servants. No outdoor medical service is complete without a parallel system of nurses and other servants. But to constitute a "satisfactory medical 'service'" there must also be provision for consultation between equals, between juniors and seniors, between general practitioners and specialists. There must be provision for assistants at operations. There must also be special provision for such highly specialized work as no country practitioner does normally or can properly undertake.

The Administrative Consolidation of Existing Medical Services.

(1) *The Local Committee.*

(*a*) *Area.*—If the activity of the various services is to be effectively correlated, the area of any committee must not be limited to a single parish. Probably the area of the local authority for public health would, on the whole, be the most suitable. This area, as determined by the Local Government Act of 1889, has been found after twenty years' experience to be very suitable for public health purposes. It always contains several parishes, and therefore provides for interparochial adjustment of the services; but, except in two of the Highland counties, it is never co-extensive with the county council area. It is certainly advisable that no new area should be created for the type of committee proposed. It is, further, eminently desirable that the expense of meetings should be reduced to a minimum. In the Islands the difficulty of holding meetings has been found exceptionally great. Consequently the Islands must form a special area.

(*b*) *Constitution.*—Of existing authorities, the District Committee—that is, the local authority for public health—would form the most natural nucleus for a composite committee. The various interests, so far as not already represented on it, might be either associated with it in the form of a consultative committee or incorporated in it. As, however, legislation is to be avoided, the services of the members of the District Committee would be entirely voluntary. Another form of committee which it is considered would be possible is one composed of representatives from the District Committee; a representative from the Local Insurance Committee; a representative from a group of parish councils; a representative from any local medical association; the medical officer of health of the county or district; one or more officers from the central bodies mainly concerned—that is, the Local Government Board, Scottish Education Department, or the National Health Insurance Commission, or the Central Lunacy Board—such officer to act as assessor.

(*c*) *Duties.*—The primary duty of the Committee would be to consider the special needs of the area, the financial position of the various authorities and bodies represented, the accommodation for nurses and doctors, the establishment of nursing homes or small hospitals, etc. It would prepare a scheme of improved medical and nursing service for submission to the central authority with a view to the Imperial grant. The central authority could form leading regulations for the duties and responsibilities of the Committee.

(2) *The Central Body.*

I. *Constitution.*—The central body would naturally be composed of representatives from the statutory central authorities already existing—namely:

(*a*) *The Local Government Board*, which is the central authority for Poor Law, old age pensions, public health, notification of births, unemployment, housing, and local government business generally; for the distribution of the capital grant to county councils and other authorities for sanatoriums and other institutions under the Insurance Act; for the approval of tuberculosis sanatoriums or other institutions under that Act, and for the approval of the manner of treatment of tuberculosis and other diseases otherwise than in sanatoriums, and for the distribution to local authorities of grants in aid of tuberculosis treatment.

(*b*) *The National Insurance Commission*, which is the central authority for the administration of the Insurance Act, and medical services under that Act other than such service as is rendered by the public health authorities.

(*c*) *The Scottish Education Department*, which is the central authority for the medical examination and supervision of school children, and for the administration of the grants made for the treatment of necessitous children.

(*d*) *The General Board of Lunacy*, which is the central authority for the medical supervision of asylums, lunacy wards in poorhouses, and boarded-out lunatics.

These four central authorities are, each in its own sphere, responsible for the official medical and nursing services already enumerated. Any additional grant made by the Treasury would normally be distributed through those central authorities for the work required of them under the various statutes. As, however, the grant contemplated would be a special grant for removing the inadequacies of medical service, it is desirable that the Treasury should also be represented on the proposed central authority. It is suggested that the Treasury representative should be chairman of the central authority, which might be designated as "The Highlands and Islands Medical Service Committee."

II. *Duties.*—The Committee would be responsible for the allocation of the grant. It would adjust the allocation to the specific requirements of the departments

concerned. It would adjust, in consultation with the various departments, the conditions to be assigned to grants for the various purposes.

CONCLUSION.

Of the system of administrative consolidation of medical and nursing services suggested by Dr. Leslie Mackenzie, the objective would be to build up a minimum salary for medical practitioners from official sources, local or central; to make each general practitioner needed for the locality the officer of as many of the local services as was found on inquiry to be expedient; to make the minimum salary such as to attract well-trained medical men to the difficult and remote localities; to organize a service of nurses for surgical, medical, and maternity nursing; to secure, by whatever official channel was most appropriate, a service of pathological and clinical specialists; and thus, by adjustment of areas where necessary, by the development of existing statutory powers, and by arrangements for the unification of official duties, to effect a working consolidation of the present services.

THE PARLIAMENTARY COMMITTEE ON PROPRIETARY REMEDIES.

EVIDENCE REGARDING BEECHAM'S PILLS.

ON January 23rd evidence was given by Sir Joseph Beecham, of St. Helens, Lancashire, proprietor of Beecham's pills and Beecham's cough pills.

The witness informed the Committee that the business of Beecham's pills was established over sixty years ago by his father, the pills being then made in his father's shop. They were not advertised, but they had a good sale among the customers of the business. Later on his father began to advertise, and had such success that he gave up the shop and proceeded to manufacture the pills on a large scale. The business had continually increased. The witness objected that *Secret Remedies* did not distinguish between household remedies which had been sold for a number of years in great quantities, and fraudulent preparations. Beecham's pills were made from a valuable secret formula; the analysis published in *Secret Remedies* was inaccurate and omitted some active ingredients. Fifty years ago Beecham's cough pills contained some morphine. When the law was altered rendering it necessary for proprietary medicines containing poisons scheduled under the Poisons Act to be labelled "poison" and their sale to be restricted to druggists, the morphine was omitted from the ingredients. Afterwards a very small percentage of the drug was again used, but a High Court decision made it clear that as the proportion was so small the medicine need not be labelled poison.

The witness said he had refrained from publishing medical or other testimonials regarding Beecham's pills although he had received thousands. He knew of many medical men who had advised patients to take Beecham's pills as a useful aperient, and the success of the medicine had been built up entirely on public approval. The circular issued with each box advised purchasers to consult a medical man as to serious or complicated disorders of the nervous system. Other complaints were also specified as requiring the attendance of a qualified medical man. As far as possible the advertising of Beecham's pills was confined to newspapers which did not insert announcements of an objectionable character. Sometimes he made it a condition that if he advertised questionable advertisements should cease to appear in the paper. Since 1906 the sale of Beecham's pills in the United States had more than doubled. In proportion to population the sales in Australia and New Zealand were larger than anywhere else.

The witness expressed the strongest objection to compulsory publication of the formulae of proprietary medicines; this was not required by the law of either Australia or America. Publication would obviously lead to the making up of widely advertised articles by chemists, the imitation being sold to the public as "according to the formula of" the well known preparation. He understood that one of the results of the increased strictness of the law in Germany in regard to this matter was the growth of the practice of medicine by unlicensed persons. In this connexion the witness quoted an article in the BRITISH MEDICAL JOURNAL of May 11th, 1912, which stated that unregistered practitioners in Berlin had increased from twenty-eight in 1869 to 1,013 in 1911, a much larger increase having taken place in Prussia.

The Chairman (Sir Henry Norman), after consulting the file of the BRITISH MEDICAL JOURNAL, remarked that the witness had evidently misunderstood the purport of the article in the JOURNAL with regard to the German law. The statement was made that, because of laws passed relaxing the conditions under which men were allowed to practise, there had been a great increase of medical humbugs of all kinds.

Continuing, the witness said he regarded it as an advantage to the public that a good formula should be compounded on a large scale. The public would not reap an equal advantage from the same formula made up by different chemists under widely varying conditions. As regards the present state of the law in relation to the proprietary medicine business, the witness considered vendors of medicinal preparations to be liable to a civil action for any fraudulent statements.

Replying to Dr. Lynch, the witness said he did not know whether his father was the discoverer of the therapeutic value of the drugs used in Beecham's pills; it was a case of the discovery of an excellent combination.

Mr. Lawson: He discovered the money value. (Laughter.)

In further reply to Dr. Lynch, the witness intimated that he did not care to state the annual turnover of the business, but he believed it to be the largest of its kind in the world. Over a million pills were sold every day of the week. The total weight of the pills made in 1912 was 50 tons.

Dr. Lynch: Is your turnover about £360,000 a year?—I do not think that is far out. We spend, roughly, £100,000 a year in advertising.

Mr. Lawson asked the witness whether, having regard to his establishment charges and the cost of advertising, other firms could not manufacture similar pills at a lower price at a reasonable profit. The reply was that it depended on the skill displayed in advertising the goods.

Mr. Lawson: Then you consider the reason for the price charged for your pills is the cost of the advertising necessary to inform the public of what you claim to be their merits?—Yes.

In the course of further examination on the question of cost, the witness mentioned that he took the formula published in *Secret Remedies* as the formula of Beecham's pills to three chemists in different large cities to be compounded, and the prices charged for the same quantity as were contained in the 1s. 1½d. box were 1s., 1s. 9d., and 2s. 6d. respectively.

The Committee adjourned for three weeks.

THE National Association for the Prevention of Infant Mortality and for the Welfare of Infancy has arranged to hold an English-speaking conference on infant mortality at the Caxton Hall, Westminster, on August 4th and 5th, immediately before the International Medical Congress. There will be two sections: the administrative will discuss the responsibility of central and local authorities in the matter of infant and child hygiene, and the administrative control of the milk supply. The medical section will discuss the necessity for special education in infant hygiene, medical milk problems, and antenatal hygiene. The President is Mr. John Burns, M.P., and the Chairman of the Executive Committee is Sir Thomas Barlow, President of the Royal College of Physicians of London. The Vice-Chairmen are Alderman Benjamin Broadbent, Councillor W. F. Anderson, of Glasgow, and Sir Lauder Brunton, M.D., F.R.S. The Executive Committee is composed of representatives of statutory administrative authorities, medical officers of health, members of the medical profession engaged in clinical practice, and representatives of voluntary associations. The Honorary Secretaries are Dr. A. K. Chalmers (Glasgow) and Dr. Eric Pritchard (London), and the Foreign Honorary Secretary is Miss Janet Lane-Claypon. The offices are at 4, Tavistock Square, London, W.C., and further information can be obtained on application to the secretary at that address.

"Swarth Gill," the birthplace of Dr. Haygarth.

Nova et Vetera.

A MEDICAL PIONEER: JOHN HAYGARTH OF CHESTER.

By JOHN ELLIOTT, M.D., F.R.C.P.,
Physician to the Chester Infirmary.

IN the beautiful valley of the Clough, in the West Riding of Yorkshire, and in the parish of Garsdale, stands an old manor house—"Swarth Gill"—hard by the road leading from Sedbergh to Hawes, and some five miles distant from the former. On the porch in a stone panel are cut the initials "I. H. I." and the date "1712"—initials which are repeated on the hinges of the massively studded oaken door and on various oak panels within the house. On the other side of the road winds the river in its rocky limestone bed, fed by mountain streams, or "gills," one of which, crossed by a quaint rustic bridge, skirts the gabled end of Swarth "gill" to dive beneath the road and join its parent stream.

This was Haygarth's home, and the initials "I. H. I." are those of his parents, John and Isabella Haygarth.

Distant a short mile is Garsdale Hall, a long, low farmhouse abutting on the road, which he also owned and farmed in his later years. On the hillsides, in front of Garsdale Hall and in the neighbourhood of Swarth Gill, are the remains of the forest trees which he planted to beautify his native dale.

In the parish church the beautiful stone and marble pulpit bears the following inscription:

TO THE GLORY OF GOD
AND IN
MEMORY OF
JOHN HAYGARTH, M.D., F.R.S.,
BORN AT GARSDALE, 1740.
DIED AT BATH, 10TH JUNE, 1827.
PRESENTED BY HIS GRANDDAUGHTER, 1898.

These are the only existing memorials of one who was a prominent figure in the medical history of his time.

Educated at the famous Grammar School of Sedbergh, he proceeded to St. John's College, Cambridge, in 1759, and graduated M.B. of that university in 1766. He was one of the three first pupils of John Dawson, the Surgeon of Sedbergh, and self-taught mathematician, who relinquished his profession for the pursuit of his favourite study about the year 1788, and coached no fewer than eleven senior wranglers. Dawson, who is said to have been a kinsman of Haygarth, was born at Raygill, in the parish of Garsdale, and "Dawson's rock" on the hillside above Raygill is still pointed out as the spot where he pursued his lonely mathematical studies.

It is noteworthy, as showing the possible influence of romantic and beautiful surroundings in the determination of character, that two other contemporary physicians of fame, Dr. John Fothergill and Dr. Anthony Askew, originated from the same neighbourhood which produced Haygarth and Dawson.

We shall hear much of Dawson in Haygarth's works, for he provided the statistical data with which the latter loved to embellish his arguments. After completing his studies at Edinburgh, London, and elsewhere, Haygarth was appointed physician to the Chester Infirmary in 1767, and the way in which he utilized the clinical material at his disposal will be best told in his own words: "Since the commencement of my profession in the year 1767 I have constantly recorded, in the patient's chamber, a full and accurate account of every important symptom, the remedies which were employed, and, when an opportunity offered, the effects which they produced. These clinical cases have always been written in Latin, as being most concise and expeditious, and as best adapted to conceal the complaints, especially female complaints, that are confidentially revealed to a physician."

Among the higher and middle ranks of society I have noted and classed the cases of 10,549 patients, from 1767 to 1801 inclusive. I have also written clinical reports of a large number of diseases among persons in the lower ranks of life, being the cases of all my in and out patients at the Chester Infirmary for thirty-one years.

His friend Dr. John Fothergill was in the habit of spending two months of his leisure time each summer at Lea Hall in Cheshire, and thither the young Chester physician constantly repaired for guidance and advice.

The physicians of Manchester, Liverpool, and Chester met four times in the year at Warrington for the discussion of medical subjects and the interchange of views; frequent reunions took place also at Frodsham, whilst the rules of the Chester Infirmary provided for a consultation of the whole staff every week on doubtful and difficult cases.

Such were his opportunities; it will soon be apparent that he was not slow to make the fullest use of them.

THE PREVENTION OF FEVERS.

In a paper read before the Royal Society in January, 1777, on the population and diseases of Chester in 1774, Haygarth gave the first hint of his plan for preventing the spread of fevers by isolation. Typhus fever and small-pox had both been epidemic in the city during that year. There had been 285 cases of fever with a mortality of 1 in 10. The proportion of deaths by the

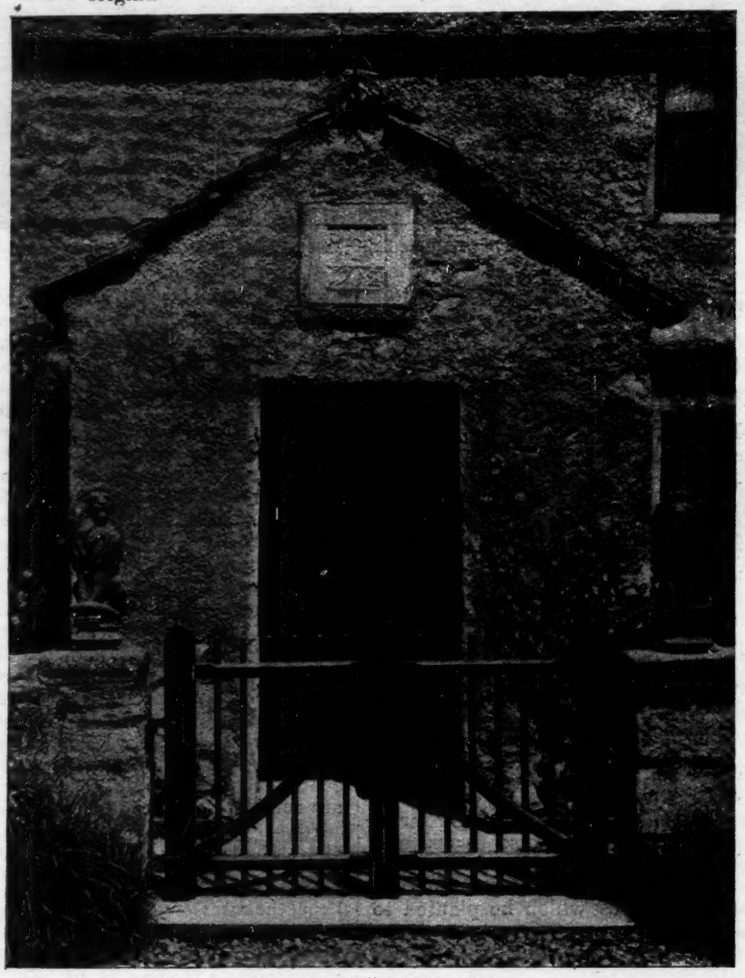
natural Small Pox to all deaths that year had been 1 to 2 and 7-10ths, and from a general survey of the City it appeares that

out of a population of 14,713 inhabitants only 1,060 (that is 1 in 14) had never had the Small Pox.

Speaking of the fever he says:

If a regulation could be universally adopted of immediately removing out of the family such of the poor people as are seized with fevers, it is evident that the most salutary consequences would follow. Reasonable objections might be made to receiving such patients into the general infirmary, even into separate wards, lest the infection should spread through the whole house, which, in a former paper on this subject, was proved to be healthy to an uncommon degree when compared with other hospitals. But might not this and every other objection be obviated by erecting, on the ground which adjoins and belongs to the Infirmary, a building to be divided into spacious, airy, separate apartments, where patients affected with fever and properly recommended might be received on any day of the week?

It will be observed th proposal, first formulated in 1774, at his original recommended the erection of infectious wards outside the infirmary building. The reasons which induced him to establish fever wards within the infirmary itself will appear subsequently.



The porch at "Swarth Gill."

SMALL-POX.

Haygarth was now, however, occupied with another matter. The dreadful mortality from small-pox in Chester in 1774, when it was epidemic, and the fact that the so-called "casual small-pox" was never entirely absent from the city, concentrated his whole attention on the possibility of exterminating the pestilence.

In the year 1777 he began to study by exact observation the laws which govern variolous infection. In this year the distemper again became epidemic. Two circumstances rendered the task of fighting the infection peculiarly difficult: the first was the almost universal belief among medical men, following the teaching of Sydenham, that the cause of any infectious fever becoming epidemic was some morbid condition of the atmosphere, a widely spread influence which it was useless to attempt to combat. The other was the ignorance and superstition of the poorer classes, who, far from endeavouring in any way to avoid infection, were in the habit of deliberately exposing their children to the infection of the small-pox, so that they might have the disease and get it over. The graphic accounts given by Haygarth of the way in which patients afflicted with the small-pox, and in every stage of the eruption, were walking on the Walls, in the Rows, and in the public streets, in close association with those susceptible to the disease, sound almost incredible.

Haygarth's exact observations during the course of this epidemic, and the conclusions he drew from them, led him to propose, at first privately in 1777, and then in March, 1778, publicly, a plan for preventing the spread of infection, and the formation of "The Small-pox Society" in Chester, at a public meeting at the Pentice on March 16th, 1778, was the practical outcome of his inquiries.

It was not, however, until 1784 that he published his *Inquiry how to Prevent the Small Pox.*

The argument on which he based his rules of prevention is summed up under nine headings. It will be sufficient briefly to summarize the principal points:

1. Small-pox never was known to be produced by any other cause than infection.

2. The incubation period is from six to fourteen days after inoculation, and not much longer in the casual small-pox.

3. Clothes, furniture, food, etc., exposed to the variolous miasms never, or very rarely, become infectious.

4. The air is rendered infectious, but to a little distance, from the variolous poison.

5. Persons liable to the small-pox are infected by breathing the air impregnated with variolous miasms either:

(*a*) Very near the patient in the distemper, from about the time that the eruption has completely appeared till the last scab has dropped off the body; or

(*b*) very near the variolous poison in a recent state; or

(*c*) that has been shut up ever since it was recent.

6. Consequently the small-pox may be prevented by keeping persons liable to the distemper from approaching within the infectious distance of the variolous poison till it can be destroyed.

In addition Haygarth laboured to prove that the poison is soluble in the air; a theory which was at once challenged by his medical correspondents, notably by his friend Dr. Percival of Manchester, and by Dr. Waterhouse of New Cambridge in America. His principal argument in support of this theory was the fact that air impregnated with the poison remained transparent even when illuminated by a ray of sunlight.

It will be seen that the view put forward in the fourth heading—namely, that the air is rendered infectious *only to a short distance*, is at variance with the experience of those in touch with modern small-pox hospitals. Their conclusions, however, are open to fallacy, and, in my opinion, Haygarth produces overwhelming evidence in support of his contention. This also was challenged by Dr. Waterhouse, the physician of New Cambridge, on very strong evidence, but, after careful study of a subsequent epidemic in America, he gave his adherence to Haygarth's conclusion.

Another notable feature of the above argument is the assertion that clothes, furniture, etc., do not become infectious, the author making the important reservation "unless they have adhering to them serum, pus, or scabs

from an infectious patient." Here again he encountered opposition from the same source, evidence of infection through a doctor's wig being forthcoming; Haygarth, however, stuck to his guns, and routed his opponents to his own satisfaction.

Based on the results of *The Inquiry* are the *Rules of Prevention*, which must be given in their entirety:

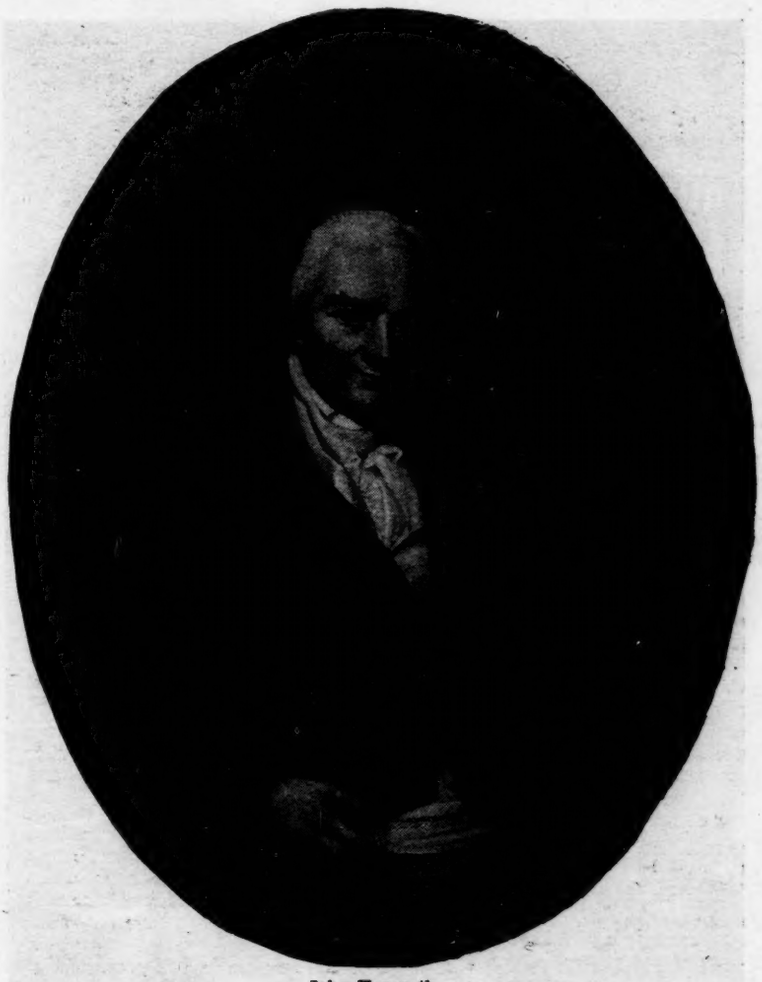
Rules of Prevention.

1. Suffer no person, who has not had the Small-Pox, to come into the infectious house. No visitor, who has any communication with persons liable to the Distemper, should touch or sit down on anything infectious.

2. No patient, after the pocks have appeared, must be suffered to go into the street, or other frequented place.

3. The utmost attention to *cleanliness* is absolutely necessary: *during* and *after* the Distemper, no person, clothes, food, furniture, dog, cat, money, medicines, or any other thing that is known or suspected to be bedaubed with matter, spittle, or other infectious discharges of the patient, should go out of the house till they be washed: and till they have been sufficiently exposed to the fresh air. No foul linen, or any thing else that can retain the poison, should be folded up and put into drawers, boxes, or to be otherwise shut up from the air, but immediately thrown into water, and kept there till washed. No attendants should touch what is to go into another family, till their hands are washed. When a patient dies of the Small-Pox, particular care should be taken that nothing infectious be taken out of the house so as to do mischief.

4. The patient must not be allowed to approach any person liable to the distemper, till every scab is dropt off, till all the clothes, furniture, food, and all other things touched by the patient during the Distemper, till the floor of the sick chamber, and till his hair, face and hands, have been carefully washed. After everything has been made perfectly clean, the doors, windows, drawers, boxes, and all other places that can retain infectious air should be kept open till it be cleared out of the house.



John Haygarth.

It will be seen that the measures relied on for disinfection were washing with water and exposure to the air. No doubt this is why Haygarth clung with such tenacity to his theory of the solubility of the poison in air.

THE SMALL-POX SOCIETY.

So much for theory; the results of the inquiry were now to be put to the practical test. At a general meeting of citizens held at the Pentice on March 16th, 1778, a "society for promoting inoculation and preventing the casual Small Pox in Chester" was formed, comprising most of the leading citizens, with Thomas Falconer as chairman.

The proposal to establish the society and the subsequent annual reports were written by Haygarth, and they are models of concise reasoning and persuasive eloquence. He gave statistics to prove that all the inhabitants of the city who were susceptible to the disease were actually infected, except perhaps eight annually; that inoculation was only fatal to 1 in 100, so that if general inoculation had been practised it would have resulted in the saving of 58 lives annually; that partial inoculation at various times and secretly would perhaps tend to spread the disease, whilst general inoculation at stated and known intervals would be productive of nothing but good. Those who feared that other diseases might be communicated by inoculation he answered by the results of experience and by quoting authorities, for example, Dr. Monro of Edinburgh, who had had a long and extensive experience.

The Small-pox Society was formed, supported by voluntary contributions. Inspectors were appointed (apothecaries or apothecaries' assistants), the medical men of the city gave their services gratuitously, rewards were given to any one who notified an outbreak of the disease, rewards also to parents for nursing their children who had been inoculated, and also to those who were successful in preventing the spread of the disease. A general inoculation was recommended every two years, and in the intervals the *rules of prevention* were put in operation.

At the end of twelve months' work the report of the society tells us that the spread of the disease had been stopped in thirty-seven places; in thirty-two of these without infecting a second family.

In 1780, 85 children were inoculated; there were no dangerous cases and all recovered. It did not spread the disease, for in the districts where most were inoculated there were fewest cases of the casual small-pox.

In March, 1781, there was not a single case of casual small-pox in Chester. In this spring 128 poor children were inoculated.

In September, 1782, it was reported that 416 cases had been inoculated since the beginning of the society, with 2 deaths (1 in 208). These deaths were doubtfully due to the inoculation. There had been great difficulty in preventing the spread of infection from reckless soldiers quartered in Chester on their way from Ireland, but the deaths from casual small-pox in Chester had been diminished by nearly one-half since the society had been in operation. The results were so striking that Leeds and Liverpool followed the lead of Chester, and the Royal College of Physicians of Edinburgh appointed a committee to inquire into the matter.

The Inquiry was translated into French and German, and attracted universal attention and approbation. In 1791 Haygarth received a letter from the Syndick and Council of Health of Geneva, couched in the most complimentary terms, asking his advice and assistance in establishing a similar institution to the Small-pox Society in Geneva; to this he suitably replied.

The initial success of the Small-pox Society was so

great that Haygarth suggested privately to Dr. Fothergill a plan to exterminate the disease in 1778. This he afterwards elaborated in his *Sketch of a Plan to Exterminate the Casual Small Pox from Great Britain, and to Introduce General Inoculation.* This was published in 1793, and dedicated to the King. John Dawson, the mathematical genius of Sedbergh, provided the calculations and estimated that such a plan, if successful, would result in an increase of population in Great Britain in ten years' time of 300,000, assuming the population to be 8,000,000, and the annual deaths from small-pox 35,000.

The *Plan* proceeded on the lines of the Small-pox Society, applied to the whole country and reinforced by legal authority, with rewards and punishments, inspectors and directors, etc.

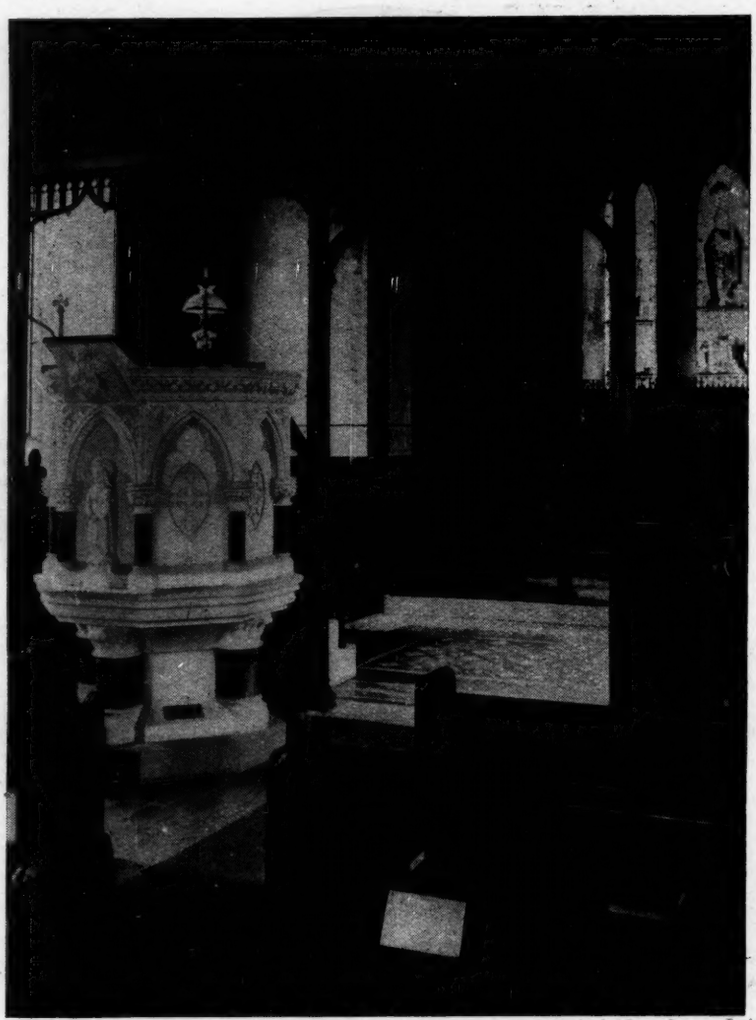
VACCINATION.

After the epoch-making discovery of Edward Jenner it could have no other than historic interest, and need not detain us. There can be little doubt, however, that if rigidly carried out it would certainly have been successful in stamping out the disease for a time; then, however, would have arisen a difficulty foreseen by Haygarth himself. The public would have grown chary of submitting themselves to inoculation, and a dreadful epidemic might have arisen. He consoled himself with the reflection, however, that on the first signs of the outbreak they would have flocked to the inoculator.

In a later edition of *The Inquiry* Haygarth wrote as follows of Jenner's discovery:—

> The discovery of Vaccine Inoculation by Dr. Jenner is the most fortunate and beneficial improvement that medical Science ever accomplished. It does not, however, preclude the necessity of investigating the variolous poison, and of considering by what regulations its propagation may be prevented. In order to secure the unthinking multitude from this destructive Pestilence, measures to prevent the Casual Small Pox should everywhere accompany Vaccine Inoculation.

So much for Haygarth's energies and activities in connexion with the prevention of small-pox.



The memorial pulpit to Dr. Haygarth, Garsdale Church.

THE MANAGEMENT OF FEBRILE CONTAGION IN GENERAL.

No sooner had the Small-pox Society of Chester been launched on its triumphant career of usefulness than his fertile brain was busy on another matter which was to bring him undying fame.

In 1780 and 1781 he turned his attention to the laws which govern febrile contagion in general. He had ascertained that the pernicious effects of the variolous poison were limited to a short distance from the patient.

> I soon also discovered that the Contagion of Fevers was confined to a much narrower sphere. Upon these principles . . . I discerned the safety and wisdom of admitting Fever patients into separate wards of the Chester Infirmary itself, instead of an adjoining building, as I had proposed in 1774. . . .
>
> In the year 1783, on looking out for proper accommodation, I found the attick story on the north side of the building unoccupied, and merely a lumber-room. It is 96 ft. long, 21 ft. broad, and being not ceiled, it is open to the roof, which is 16 ft. high. This chamber is divided by a partition in the middle, thus forming two wards of 48 ft. in length. Through them is admitted a very free circulation of air, by nine windows, which are placed on all sides of the wards, and by others in the adjoining passages; by a door in the partition between the wards, and by a large aperture in the upper part of the partition. Several of these windows are constantly open during the day, nor are they all closed at night, if the patients be numerous, and the weather moderate. Adjoining to the west end of these wards is a room for the nurse, into which a fever patient is sometimes admitted. At the east end of the wards a wash house is conveniently situated, so that no foul clothes need be brought among the other patients. On the same side and floor there is placed a separate necessity, which prevents of personal intercourse with the rest of the hospital.
>
> At the commencement of this institution, at Chester, apprehensions of the danger of infection were so prevalent that no nurse could be persuaded to attend the Fever wards. In these difficulties a surgical patient was prevailed on to undertake this office in the men's ward. He caught the Fever and died of it. When a proper nurse was procured she (Lowry Thomas) had the care of both wards for eleven years with only occasional assistance. During this period she was infected by the fever several times, and died of it in July, 1794, on the fifth attack, after a week's illness. The nurse who succeeded has twice caught the Fever, and was each time very ill of it, but otherwise has enjoyed good health for four years. A night nurse . . . caught the Fever. And other occasional nurses may probably have suffered infection, but, as far as has come to my knowledge, these four are the only instances of Infection communicated in the Fever Wards at Chester during a period of fourteen years and a half—from August, 1783, till March, 1798. Both these nurses (Lowry Thomas and Jane Bird) were susceptible of Fever. They both exposed themselves to Infection without reserve, even more than was necessary and useful, especially the former. In spite of cautions and exhortations to the contrary, which I have often given her, she used to approach those who were very weak and ill, so close that she must have inspired the infectious breath of a Fever patient with very little dilution of other air, in thousands of instances, without receiving infection. . . . No medical or other visitors were ever suspected to have caught infection in these wards, though they have touched the patients in innumerable instances. Yet the Apothecary (Mr. Manning) was susceptible of infection. He caught a very dangerous putrid Fever by visiting a poor sick family (which I also visited) as out-patients in a close, dirty room. Unreasonable prejudices prevented these poor people when attacked by the Fever from accepting the benefit which the Infirmary offered to their choice of being admitted into the house.

This account of the first institution of fever wards in a hospital is taken from Haygarth's work, *A Letter to Dr. Percival on the Prevention of Infectious Fevers* (1801), which has been justly described as a model scientific

treatise. To the general medical reader it cannot fail to be of the greatest interest, whilst to those resident in Chester and the district it is a fascinating study. In his classical researches on the "latent period" (or incubation period) of fevers, he tabulates by name the cases in the order in which they were attacked; many of these names are familiar Cheshire surnames to-day. As an instance, may be quoted the first series of cases of typhus investigated, which occurred among the family and dependants of Mr. Cheers, a farmer of Barrow, who went a journey to Manchester on April 21st, 1781, where he contracted typhus, which spread through his household, only three out of twenty escaping. The descendant of Mr. Cheers is still farming at Barrow.

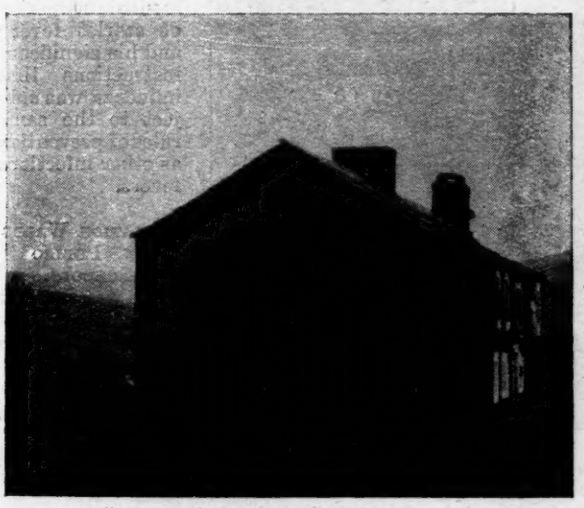
"Garsdale Hall," a farm owned by Dr. Haygarth.

The success of the experiment at the Chester Infirmary was immediate. "During the first year," says the annual report, "30 cases of Fever were admitted, many of them in the most imminent danger; yet they all, except one, recovered." Dr. Currie, a colleague of Haygarth, writing in 1802, says:

> I constantly attended the Infirmary for sixteen years, and there never was at any one time reason to suspect that contagion had been communicated from the Fever wards to the other patients in the house.

The provision for isolation effectually stopped the spread of an epidemic of typhus, which caused considerable alarm in the city in 1784, and carried off some of the principal inhabitants.

Chester was visited by John Howard, the philanthropist, on his tour of inspection of gaols and hospitals in the



"Raygill," the birthplace of John Dawson.

United Kingdom. He was so impressed with the "good rules" for the fever wards that he reproduced them. His observation on both the gaols and infirmary are here quoted verbatim as an instructive object lesson that the extremes of ignorance and enlightenment can exist side by side in the same city:

CHESTER CITY AND COUNTY GAOL.

Chester City Gaol.—No alteration. Prison not secure. The convicts, and prisoner for trial, were severely ironed, by the neck, hands, waist, feet, and chained to the floor; and at night to their beds in the horrid dungeon. Here was the first iron glove I have seen in England, which, though not yet used, shews the severity of the gaoler's disposition. Allowance, a pennyworth of bread to felons, and a pound to debtors; inferior in quality to that sold in the city. Debtors and felons are permitted to beg some hours in the day. That prisoners are not supplied with necessary food is a disgrace to such an opulent city. No proper separation of men and women either here, or in the county gaol. Gaoler's salary £50 in lieu of the tap.

1787, Dec. 21:
Debtors 6. Criminal 1. Convicts 6.
1788, March 2:
Debtors 8. Felons &c. 7. Women Convicts, 2.

City Bridewell.—Chester City Bridewell. A small alteration made by dividing a room or two. No employment: no allowance. Court not secure. Keeper has a spacious garden: his salary only £4. He sells beer.

1787, Dec. 21:
Prisoners 3.
1788, March 2:
Prisoners 2.

CHESTER GENERAL INFIRMARY.

Infirmary.—The wards are spacious and clean, and the beds not crowded. The two fever wards were not in the least offensive: they were fitted up on the upper floor, on account of a contagious fever in Chester in 1784, and very properly were not ceiled, but plastered to the tiles.* By the attention of the ingenious Dr. Haygarth, and his colleague, most of the patients then recovered. The good rules for these wards I here copy.

Rules for the Fever Wards; to Prevent the Infection of Other Patients in the Chester Infirmary.

Chester Infirmary Rules.—I. Fresh water and coals are to be brought up to the fever wards every morning; and other necessaries on ringing a bell.

II. No fever patients, nor their nurses are suffered to go into other parts of the house. No other patient is allowed to visit the fever wards; nor any stranger, unless accompanied by the apothecary or his assistant.

III. Every patient, on admission, is to change his infectious for clean linen; the face and hands are to be washed clean with warm water, and the lower extremities fomented.

The old ward in the Chester Infirmary, which was used by Dr. Haygarth for the isolation of fever patients in 1783.

IV. All putrid discharges from the patients are to be taken out of the ward as soon as possible.

V. The floors of the wards are to be washed very clean twice a week, and near the beds every day.

VI. All foul linen is to be immediately thrown into cold water; and carefully washed twice out of clean water, in the adjoining room.

VII. Blankets, and other bed and body clothes are to be exposed to the open fresh air for some hours, before they are used by another patient.

* Such upper rooms in most hospitals and workhouses, having joists laid across, and being ceiled at the square, are generally bad apartments; so also the upper rooms in many houses are by this practice made close, unhealthy places, which, had they been ceiled pretty near the ridge and had the sides coved, would have been more pleasing to the eye and fresher to the inhabitants.

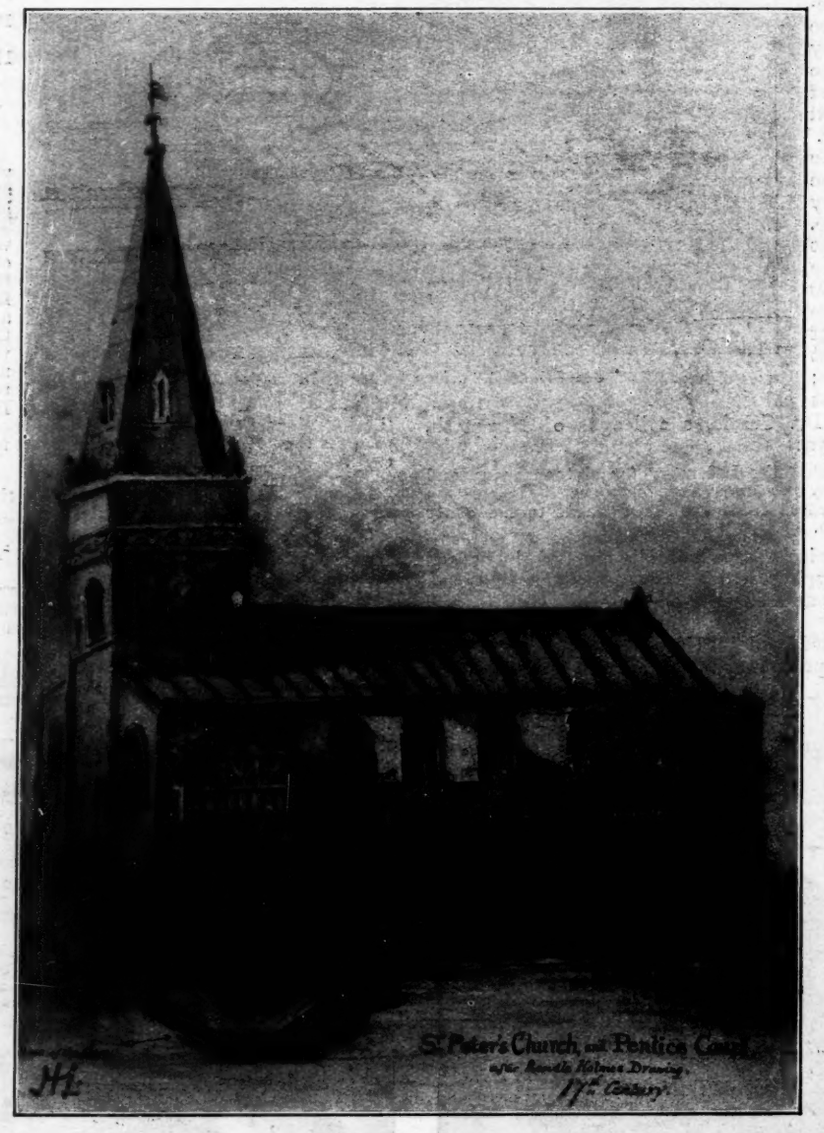
VIII. All the bed clothes of the fever wards are to be marked "FEVER WARD," and all the knives, forks, pots, cups, and other utensils are to be of a peculiar colour, lest they be inadvertently taken among other patients.

IX. All the windows of the fever wards are to be kept constantly open in the day, except the weather be very cold or wet; and some of them should not be shut in the night, if the patients be numerous, and the weather moderate.

X. No relation or other acquaintance can be suffered to take away any linen unwashed, nor other clothes till they have been long exposed to the fresh air.

Writing on the subject of education John Howard remarks:

But no plan that I have seen for the extended instruction of the poor seems more judiciously calculated for the purpose than one lately instituted by the trustees of the Blue Coat Hospital, in the City of Chester, where, to an ancient establishment of an hospital for poor children, a charity for the education of a large number of out-scholars has been annexed, and has been productive of the happiest effects. I will, therefore, here transcribe the following particular account of it.



The Ancient Pentice Court at the High Cross, Chester.

PLAGUE.

In the second edition of his work in 1791 John Howard prints two letters from Dr. Haygarth on the establishment of lazarettos for the plague; Hilbre Island is here recommended as a suitable site for a lazaretto for the protection of the Port of Liverpool in connexion with the Turkey trade. Of these letters it is sufficient to say that in scientific acumen they are far in advance of their day, and his plans for shortening the absurdly long period of quarantine then in vogue remind one strangely of the regulations now in force in the ports of Great Britain.

THE MANCHESTER HOUSE OF RECOVERY.

As a consequence of the success of the Chester Fever Wards, Manchester, in 1796, opened a "House of Recovery" on similar lines. The beneficial effects of this were at once apparent. The number of fever cases fell from 267 in the preceding year to 25 in the following one. "The bills of mortality for 1796 show a decrease in the burials amounting nearly to 400." "In 1797 the expense of pauper coffins was diminished to one third." As at Chester, the fever patients were conveyed to the House of Recovery "in a sedan chair to be employed solely for this purpose, with a moveable lining, which should be made of linen, and always exposed to the air after it had been used, and frequently washed." "Fever wards were established in 1797 at Liverpool, in imitation of ours at Chester, but groundless fears soon excluded them from the Infirmary."

GENERAL HOSPITALS.

In 1801 Dr. Haygarth was informed that Guy's Hospital was about to follow the example of Chester, and reserve two wards for fever cases. When I entered St. Bartholomew's Hospital as a student in 1881 there were similar fever wards (the Radcliff wards), which no doubt owed their inception to the same example.

INCUBATION PERIOD OF FEVERS.

Much might be written on the subject of Haygarth's researches on the incubation period of fevers, of which he was the pioneer; on his hint that possibly the "putrid fevers" might embrace some varieties different from true typhus, based on the variability and long duration of their incubation periods; on his advice as to the prevention of fevers in barracks, in army encampments, and in the navy, tendered to the Government, who afterwards sent down to Chester Castle instructions strictly enforcing his own Rules of Prevention, apparently oblivious of the trifling fact that he himself was the author of them; on his determination of the incubation period of scarlet fever; and his significant instructions that influenza was subject to the same rules of prevention as other infectious fevers.

ISOLATION WARDS IN PUBLIC SCHOOLS.

He was the first to recommend isolation wards in public schools, which he did in the following words:

In every boarding school a large airy room ought to be appropriated to the reception of scholars ill of infectious Distempers. Where the patients are numerous, or where there are several patients in different boarding houses near each other, it would be more commodious, though by no means indispensably necessary, to provide lodgings for them in a separate house.

YELLOW FEVER.

Published along with the *Letter to Dr. Percival* is an *Address to the College of Physicians at Philadelphia on the Prevention of the American Pestilence*, "because I have the fullest confidence that the measures which it recommends, from my own experience at Chester, would effectually suppress the American pestilence" (the yellow fever).

It is noteworthy, in this connexion, that an American contemporary physician (Dr. Caldwell) ascribes the disease

to a peculiar constitution of the atmosphere, "as proved by the multitude of grasshoppers, flies, and *muskitos*."

EPIDEMIC HYSTERIA.

Haygarth was now at the zenith of his fame. He enjoyed the friendship of, and corresponded with, the principal physicians of the day. He was consulted on all obscure and difficult medical questions, for example, an epidemic of convulsions which occurred in Anglesey in September, 1796, and threatened to assume extensive proportions; he at once diagnosed it as hysterical in nature, to be cured by isolation of the sufferers. The affection appeared only among women, and those only who had witnessed the manifestations in others. He quotes a similar epidemic which occurred in Angus some thirty years before, and makes the interesting observation that convulsive affections were excluded from the female wards of the Chester Infirmary.

LIFE IN CHESTER.

He resided during the earlier years of his practice in Watergate Street, but subsequently built for himself and occupied the house in Foregate Street, now in the occupation of Messrs. Churton and Elphick. He had an extensive garden, which, together with the house, he sold on his retirement from Chester to "Madame" Bold. The garden was built upon and occupied the area now known as Bold Square, and named after the lady who acquired the property.

"METALLIC TRACTORS."

In 1798 he removed to Bath, where he practised his profession at No. 17, The Circus, and renewed his friendship with Dr. Wm. Falconer, F.R.S., a former colleague at the Chester Infirmary. About this time Perkins's metallic tractors had acquired a wonderful reputation in the cure of rheumatic affections on account of the animal magnetism which they were reported to exert. It occurred to Haygarth that a lifelike imitation of the tractors, executed in wood, might work similar miracles on the unsuspecting patient, and in conjunction with Dr. Falconer the experiment was tried on some patients of the latter in the Bath General Hospital, with all due solemnity, in the presence of several members of the hospital staff. Five cases were selected for the experiment, being well marked cases of affections of the joints—ankle, knee, hip, and wrist (January 7th, 1799). The result was a complete success, and the patients experienced great relief. Next day the real Perkins's tractors were used, with the same result. These experiments were repeated by Mr. Richard Smith at the Bristol Infirmary; tenpenny nails coloured with sealing wax, bits of tobacco pipe, etc., artfully disguised, were used on various occasions with the most gratifying success. So great a reputation did he acquire that the number of candidates for the tenpenny nail treatment reached quite embarrassing proportions. The reader will find a full account of the matter in Haygarth's work, *Of the Imagination as a Cause and as a Cure of Disorders of the Body, etc.* (1800).

ESSAYS WRITTEN AT BATH.

Having no hospital appointment now, he set to work to analyse the clinical records which he had industriously accumulated; and in 1805 he published (1) *A Clinical History of the Acute Rheumatism*, (2) *A Clinical History of the Nodosity of the Joints*.

The treatise on rheumatic fever was written to show the efficacy of the Peruvian bark in the treatment of that disease, of which 170 cases are analysed and tabulated. On one of Haygarth's early visits to Dr. John Fothergill at Lea Hall, the latter had advised the use of this drug in preference to blood-letting, purging, and the other methods of treatment then in vogue. It appears that there was a prejudice against using the bark in cases of high fever. Haygarth made an extended trial of the drug, and proved its efficacy. His method of procedure was to "cleanse the stomach and bowels with antimonials," and then administer the bark in increasing doses. The treatise, with its careful clinical records, well merits extended study. As usual, it attracted much notice in the medical world, and led to voluminous correspondence with leading physicians. Haygarth's conclusions will meet with the approbation of the physician of the present day, who is in the habit of using quinine in cases which prove refractory to the salicylates. Haygarth contended that it prevented the chronic rheumatism, which is so painful a sequela of the acute disease.

"Nodosity of the joints" was a name which he proposed to substitute for "rheumatic gout." His treatise on this affection is remarkable for a clear conception of the difference between the various forms of rheumatism and gout. He had read a paper on this affection in 1779 at one of the medical meetings at Warrington.

In 1810 he published his *Synopsis Pharmacopoeiae Londinensis*.

FREE SCHOOLS.

He had always been interested in the state of the free schools in the north of England, and this formed the subject matter of his *Letter to Bishop Porteous*, 1812. It is said that he exerted himself strongly to influence members of Parliament in this question.

SAVINGS BANKS.

In the year 1813 the city of Bath adopted his plan of self-supporting savings banks, concerning which he published his *Explanation of the Principles and Proceedings of the Provident Institution at Bath for Savings* (1816).

THE CLIMATE OF CHESTER.

Dr. Haygarth's account of the climate of Chester, although the subject of one of his earliest publications (*Phil. Trans.*, vol. lxviii, for the year 1778), has been reserved for later notice. There seems to be nowadays a widespread belief that in some unexplained way the climate is unfavourable, and a surprising amount of sympathy is constantly being showered upon the inhabitants of that devoted city on account of their supposed disadvantages of climate—sympathy which, however, is entirely thrown away upon them, for they are very far from participating in this literary emotion. It would be easy to show from published records that in respect of rainfall, mean temperature, absence of fog and east wind, etc., Chester has a favourable record, but this information is accessible to all. Moreover, it is a well-known fact that children and old people thrive in Chester, and that the latter live to a great age in that city, whilst the climate is a mild and equable one in the winter. What does Haygarth say?

After an exhaustive study of the death-rate in all the principal towns both in Great Britain and on the Continent in his day, and also in rural districts, he concludes:

> That the centre is the most healthy part of the city; that a less proportion die annually here than in most country villages; and, as far as observations have hitherto been made, that it is probably as healthy a spot as any on earth are surprising facts; yet these facts are clearly evinced by the united evidence of six separate districts taken on a medium of ten years.

Again, having shown that the death-rate in women is comparatively low in Chester, he says:

> It will not be improper to observe that the women, especially in the higher and middle ranks of society, are remarkably beautiful. These facts clearly prove that the manners and situation of Chester are peculiarly favourable to the female constitution.

Again:

> The average of deaths within the Walls is 1 in 58. This is much superior to what is recorded in the country, and no other large Town approaches it in longevity nearer than in the proportion of 28 to 40.

During his later years Dr. Haygarth paid frequent visits to his native dale, where he owned several farms, and for the inhabitants of which he entertained the warmest affection. His long and useful life, spent in honour, came to a close on Sunday, June 10th, 1827, at Lambridge House, near Bath, at the ripe age of 87.

The name of Haygarth is venerated in Chester, the city of his adoption, the cradle of his fame. The ancient Pentice Court has gone, removed in 1803 as an obstruction to the all too narrow thoroughfares. The fever wards in the Chester Infirmary, still persisting, will be renovated under the reconstruction scheme now in progress. It has been proposed, and the suggestion has met with approval, that the landing comprising these two wards shall be called the Haygarth Block, and the wards named after the two heroic nurses (Lowry Thomas and Jane Bird), who gave their lives for the relief of suffering humanity.

There can be no doubt that the services of one who did

so much for the city will never be forgotten in Chester, but the writer of this essay is of opinion that they have not received adequate recognition from medical writers of to-day. It would be difficult for one, around whose judgement has been cast the glamour of local interest, and perhaps, also to some extent, the bias of hero worship, to form a strictly impartial estimate of them. He will therefore content himself with simply recording the facts as above, and leave them to the judgement of his professional brethren, and venture to recommend to their perusal the works of Dr. Haygarth, and especially his *Letter to Dr. Percival on the Infectious Fevers.*

MEDICAL BENEFIT UNDER THE GERMAN SICKNESS LEGISLATION.[1]

THE long-promised Report on the Medical Benefit under the German Sickness Insurance Legislation has been issued. It is based on inquiries made for the Government in the course of a number of visits to towns in various parts of Germany, where typical methods of organizing the insurance medical service are in operation.

In the Prefatory Note it is shown that the German Sickness Insurance system is organized on a local basis by trades, occupations or undertakings, that the rates of contribution are not uniform, and that additional benefits beyond the minimum required by law are freely given. Great variety thus results; thus at one extreme we get the "parochial" organizations, composed mainly of poorly-paid workers, receiving the minimum benefits, while at the other extreme are the factory or works organizations, in which the higher grades of labour are represented, and which give various additional medical benefits. Between these two extremes are so many varieties that it is impossible satisfactorily to compare the German Insurance Medical Service with anything that exists under the more uniform British system.

As regards the cost of medical treatment, the Report points out that in the German official returns cost is calculated by reference to the number of persons insured, though treatment is in many cases extended to dependants. In other words, the cost per head of persons entitled to treatment is not given. In order to ascertain as far as possible what this cost amounts to, it will be seen below that two groups of societies are taken: (1) Those which give medical treatment to members only and (2) those which also give treatment to dependants of members. In each of these groups, again, a great variety is found, depending largely on the social status of the members and the amount of their contributions. It is also noted that the German law may include services which are not included in the British Insurance Act, such as treatment by specialists and dental treatment, and many societies incur considerable expenditure on providing baths, milk, medico-mechanical, and other forms of treatment.

As regards the cost of drugs, it is almost impossible to make a comparison with the English system. The cost of drugs is enhanced by the fact that the chemists' trade is a monopoly, the number of pharmacists licensed to dispense being strictly limited in every district, so that there are always large numbers of fully qualified chemists who can only go as assistants to the licensed pharmacists. Dispensing by doctors is stated to be almost unknown in Germany. It is also to be noted that in many societies drugs are supplied to dependants. In Leipzig, for instance, where the costs of drugs is put down at 3s. 6½d., as a matter of fact 1s. 4½d., or 39 per cent., is incurred on behalf of dependants of the insured. The cost of various expensive appliances, dental treatment, milk, baths, etc., is also included. On the other hand, medical attendance is only given in most cases for twenty six weeks, whereas in Great Britain it is to be given during the whole period of disablement; it has not been found possible to estimate the additional cost which this will entail.

In 1910 the aggregate number of persons coming under the Sickness Insurance was 13,955,000, and the clubs or "funds" (Kassen) numbered about 23,000. Ordinary wage-earners are compulsorily insured, irrespective of the amount of their earnings, but certain other classes, including works officials, foremen, technical officials, and persons in a similar position only come under the law if their remuneration does not exceed £100 a year. This was increased to £125 by the law of 1911, which, however, will not come into full operation till the beginning of 1914. Eight types of insurance "funds" are recognized by the law, the societies being organized by separate trades or undertakings, except that in the larger towns there are "federations" for groups of trades, mutual aid associations, and organizations formed by the parochial authorities for persons not entitled to join the trade societies. The result is that the various organizations present a wide variety of social conditions, some composed of workpeople with relatively high wages and others representing the lower grades of labour. All the funds are autonomous, subject to some supervision by the commune or the State. Each is limited to the district for which it was formed, and is governed by an executive council elected by the insured and the employers in the proportion in which they bear the cost of the contributions—namely, two-thirds insured and one-third employers. The law of 1911 so extends compulsory insurance to fresh classes of wage earners that it is estimated that when it is in full operation it will include 19,000,000 persons.

SCOPE OF MEDICAL BENEFIT.

The law does not define what is to be understood by medical treatment, and the widest latitude is allowed to the funds. The doctors claim, and the funds tacitly agree, that medical treatment may comprise everything necessary for restoration to health, irrespective of the cost; the doctor in attendance has alone the right to decide what this treatment shall be. All operations necessary to restore the patient to health are included, but not operations to remove defects or blemishes which do not affect working capacity. At the same time, the surgical work of the insurance doctors is not great owing to the large extent to which the public hospitals are used. Contracting out, that is, a cash payment instead of medical treatment, is allowed only in the case of members who have ceased to be employed, and have become voluntary contributors and reside outside the district served by their fund. The minimum benefits which all funds must provide are (*a*) medical treatment for twenty-six weeks, (*b*) medicines, spectacles, trusses, and similar appliances during such sickness, or (*c*) hospital treatment in lieu of (*a*) and (*b*). The "parochial" funds are not permitted to exceed these minimum benefits, but many of the higher grade societies provide, for an extra contribution, some or all the following additional benefits:

1. Treatment with medicine and appliances may be prolonged for not over fifty-two weeks.
2. A wider range of appliances.
3. Treatment during convalescence for not more than a year.
4. Attendance by midwife and doctor in ailments of pregnancy.
5. Free medical treatment with or without medicines and appliances for families and dependants.

Extensive use is made of specialists, with whom the societies often have special agreements. Thus, of the 341 doctors engaged by one of the large Berlin funds, 159 are general practitioners and 155 specialists for eye, ear, nerve, skin, throat and lung, stomach and urogenital diseases, surgery, and diseases of women; homœopathic practitioners also are employed. In Berlin the general practitioners confine themselves as far as possible to consultations, and refer patients to surgeons on the list for even small operations. Treatment often comprises *x*-ray applications, electrical treatment, baths, and all kinds of medico-mechanical treatment. Dental treatment is generally included, and some funds contribute towards the cost of artificial teeth, or even have fully equipped dental clinics of their own. The insurance doctors are, as a rule, allowed a free hand in prescribing, but some funds prohibit drugs whose therapeutic value is not sufficiently proved, and certain expensive drugs. The prescriptions may be made up by any qualified pharmacists, except where the fund has a special agreement with particular pharmacists. The prices are as scheduled in an official scale, as provided by the law, with a payment for dispensing and vessels, but subject in general to from 10 to 20 per cent. discount. The appliances that must be supplied are spectacles, trusses, and "similar"

[1] Parliamentary Paper Cd. 6581. Price 4½d. Eyre and Spottiswoode.

appliances, and "it has been held that the test of 'similarity' may be a test either of purpose or of expense." Some of the larger funds provide more expensive appliances, such as artificial limbs, appliances for splay foot, corsets, and other supports up to a maximum cost per member of £2 10s. in Berlin or £3 15s. in Leipzig.

Hospital treatment is very largely given, and forms an important part of the cost of medical benefit. The provision of hospitals is in Germany a duty of the local government authorities, and the public hospitals are used for the great majority of patients so treated. But a certain proportion are also sent to institutions managed by ecclesiastical bodies, or to State, university, or private clinics. "Maintenance fees," which vary from 2s. to 3s. a day, are paid in respect of patients in hospitals. In the public hospitals there is no extra charge for operations, but in private clinics extra payment is required not only for operations, but for the more expensive dressings and appliances. In addition to the sanatoriums and convalescent homes provided under the German Invalidity Insurance, many of the sickness insurance societies have sanatoriums and homes of their own paid for out of the receipts for sickness insurance.

Families and Dependants.

Insurance of families and dependants of the insured is an optional benefit and is paid for in various ways—for example:

(*a*) The members pay for it separately and the accounts are kept separate.
(*b*) The married members simply pay a higher contribution, but no separate accounts are kept.
(*c*) Family benefits are given to the married members, though there is a uniform contribution for married and single alike, and no separate accounts are kept.

In some cases only treatment is given, but without medicines or appliances for dependants. In most cases the doctors receive an inclusive fee for members and families. No record, official or otherwise, exists as to the extent to which family insurance is provided, and the fact that the cost is often defrayed out of the common fund explains why in the annual Government returns no attempt is made to assign to members and dependants their respective shares of the amount under the composite heading "medical treatment." In Leipzig, Stuttgart, and Dresden family insurance is common, but it is rare in Berlin. Moreover, there is wide divergence in the meaning attached to the word "dependants." In some cases it only means wife or husband and children below 14 years of age, but in others it includes relatives in charge of the household, parents, or parents-in-law, and often any relatives by blood or marriage wholly or mainly dependent on the insured member. Thus the capitation fee paid to a doctor who has to attend both member and dependants for that fee is no criterion of the actual payment per person on his list.

Methods of Remuneration.

The sickness funds have a free hand as to the method of remunerating their doctors, though in the absence of a formal agreement payment is by attendance according to the minimum fees of an official scale, and where the doctors are well organized, as in Leipzig, they have insisted on this scale being adopted, making perhaps some modifications in its details; they cannot, however, increase the minimum fees therein specified, but in very few towns is any uniform system adopted. The methods of remuneration may be grouped as follows:

1. *Payment by Attendance.*—Here as a rule a capitation payment per insured person is put into a pool, out of which the doctors are paid for each attendance actually given. The fees are the minimum of the official scale, though in some cases there is a reduction in the case of often recurring services or a general agreed reduction varying between 5 and 20 per cent. on all official minimum fees alike. Under this system the pool is generally limited in advance, but in some cases it is unlimited, and here it is almost invariably found that the total cost is higher; for example, in Munich, in funds where the pool is limited, the cost is about 6s. a member, which covers all services; where the pool is fixed except for extra fees for special services the total is from 5s. 9d. to 7s. 6d., and where there is payment per attendance on the official minimum scale without a fixed pool the cost is from 8s. to 10s. In one large factory fund when the pool was limited in advance the cost was 9s. 4d. per member, which included treatment of dependants, but when the pool was unlimited the cost was 15s. 10d.

2. *Capitation Payment.*—Here there is a fixed yearly fee per head for all persons on the doctors' lists, choice of doctor being allowed yearly, but different capitation fees are paid to general practitioners and specialists. In a large number of cases general practitioners get 4s. a year, while specialists have from 6s. to 10s. for the treatment during twenty-six weeks, if necessary, of each case referred to them by a general practitioner, the lower fee being paid to eye specialists and the higher fees to specialists for ear, nose, throat, skin, and sexual diseases; surgeon-dentists receive 5s. a case. In some cases, in addition to the 4s. capitation fee to general practitioners, there are extra fees—15s. for confinements, 4s. night visits, 2s. night consultations, and fees for assistance to other doctors.

3. *Capitation Payment into a Pooled Fund, with or without Extra Fees for Special Services.*—This is probably the most common method adopted, the fees for special services being first deducted and the balance being then divided among the doctors according to services rendered. In some cases, however, the pool is all divided among the doctors, and certain specified services are paid for outside the pool. Thus, in the Munich Federation, there is a pooled capitation fee of 4s. 3d., which is divided among the doctors according to services rendered, but extra payments are also made for certain services. In the Essen Federation the capitation sum pooled is 3s. 6d., but there is an arrangement by which the doctors are guaranteed 90 per cent. of the value of their individual services charged for on the basis of 1s. for a consultation and 1s. 6d. for a visit. In Düsseldorf there is a capitation pool from which payment by attendance is made, and the amount of the capitation is based every year on the average value of the services performed during the three preceding years, charged on an agreed scale of fees. In this way the capitation sum paid to the pool has ranged from 6s. to 6s. 6d. per member.

4. *Payment per Case of Sickness Attended.*—This is an uncommon method, but the Frankfort Federation pays its doctors for members resident in rural districts 5s. a case of sickness, subject to the condition that for this fee a patient must be attended for twenty-six weeks, if necessary, and that three cases of sickness at the most may be charged for any one member in one year.

5. *Fixed Salaries with Private Practice Allowed.*—This is also an exceptional method, though it is adopted by two of the largest federations. The Dresden Federation divides its area into 160 districts of unequal extent, and a doctor is assigned to each. The salaries range from £30 to £250, and the only extra payments are 3s. for night visits, and mileage in the rural districts. The total cost of medical attendance, including attendance on dependants, was only 6s. 4½d. a year per member, but the cost of hospital and other institutional treatment, partially given to dependants, was 5s. 3½d., while for medicines and appliances, supplied only to members, it was 4s. 5d. A variation on this method is a minimum retaining salary with an addition dependent on the amount of service actually rendered.

6. *Whole-time Service.*—This has been tried at times, but only experimentally, the longest experiment being for seven years at Remscheid, where six doctors were appointed to attend 10,000 members and their families at salaries of £300 to £350, except an eye and ear specialist, who received £350, rising to £400. Each doctor had an assigned district, but in case of excessive work could refer patients to a colleague. The cost of medical attendance ranged from 5s. 9d. to 7s. 3d. per member, though dependants also had to be attended.

7. *Medical Benefit Associations.*—In Berlin, Munich, and Cologne groups of societies have established associations for providing medical attendance, the association administering all the statutory medical benefits on behalf of the affiliated societies. The Berlin association has 191,000 members and divides the city and suburbs into districts, appointing one doctor at least to each district at a fixed salary; there are now 160 general practitioners and forty specialists engaged. Members may consult any doctor on the list, but for visits must call in one who is near at hand. The affiliated societies pay 3s. 9d. a member to the association, and the doctors' salaries average £150, but

they are free to attend other members of unaffiliated societies. At Munich a similar association pays the doctors according to services rendered from a fixed pool, consultations being reckoned at 9d. and visits at 2s., with fees for operations according to scale.

Probably most of the chief sickness funds have tried various methods of remuneration, and the medical arrangements are still in a state of flux. In the new Insurance Law of 1911 the Government deliberately refused to bind the funds to any particular mode of engaging the doctors or to any special rate or basis of remuneration, contending that these matters are better left for free negotiation.

Cost of Medical Benefit.

The wide latitude allowed to the sickness funds in regard to the contributions that may be levied upon workpeople and employers would seem to have encouraged a liberal expenditure on medical benefit, and there has been a steady increase in the percentage levy on wages. Taking all the sickness funds together, in 1888 the yearly expenditure per member for medical treatment, including general practitioners, specialists and extras, and also including treatment of dependants in many cases, was only 2s. 3d., and some of the largest funds were actually able to obtain medical treatment for 1s. a member. From this very low beginning there has been a steady rise until in 1910 the expenditure was 5s. 10½d. per member. In the same period medicine and appliances, including cost for dependants, rose from 1s. 10d. to 3s. 8d., while hospital treatment rose from 1s. 6d. in 1892 to 3s. 5½d. in 1910, but it should be noted that the hospital treatment here mentioned does not include the sanatorium and institutional treatment given under the invalidity insurance, which in 1910 amounted to 1s. 4½d. per member. Taking the two extreme grades of societies, in the parochial funds which only supply minimum benefits and for members only, the cost in 1910 was 4s. 2.2d. a head for attendance, 2s. 2.4d. for medicines and appliances, and 3s. 1.8d. for hospital treatment, a total of about 9s. 6½d. a member. In the factory funds, which have higher contributions and supply additional medical benefits, often for dependants as well as for members, the cost was 7s. 10.6d. for attendance, 4s. 9.7d. for medicines and appliances, and 3s. 6d. for hospital treatment, a total of 16s. 2d.; but, as already explained, these figures for the factory funds throw no light on the remuneration of the doctors per person on their lists, as the societies, as a rule, do not know the number of the dependants on their members for whom they are liable. The payments to the doctors were, however, ascertained for twelve large sickness funds with an aggregate membership of 985,000, the expenditure of which does not include attendance on dependants, and also for six funds with 475,000 members, which were funds of the highest type, giving a wide range of additional medical benefits in which attendance on dependants was included. In the first class, where dependants were not included, general practitioners and specialists together received an average of 4s. 10d., while in the second class, where attendance on dependants was included, they received an average of 7s. 8d. a member. There is, however, considerable variation in the cost of attendance as between funds of the same type and those of different localities. For example, in the large funds of Berlin, where members only receive attendance, the payment to general practitioners and specialists ranged from 3s. 8d. to 4s. 7½d., while in the Munich Federation it reaches 5s. 9d.

DRUGS.

The report goes on to deal at length with the German pharmacy system and the monopolies enjoyed by the pharmacists. The data available show that the extension of medical treatment to the dependants greatly swells the drug bill. The case of Leipzig has already been mentioned, where in 1911 drugs and dressings came to 3s. 6½d. per member, but of this amount 1s. 4½d. was incurred on behalf of dependants. In the same way the medicines prescribed by the doctors of the Stuttgart Federation came to 4s. per member, but 1s. 8½d. of this was on account of dependants.

MISCELLANEOUS.

Full details are given of the cost of attendance, drugs, and various appliances and hospital treatment for a considerable number of individual societies and federations of various classes, and the report concludes with translations of the forms of agreement between the doctors and the funds in Leipzig and Berlin, agreements with pharmacists at Frankfort-on-Main, and the rules of the doctors' federation of Wurtemburg, relating to economical methods of prescribing.

ROYAL MEDICAL BENEVOLENT FUND.

AT the January meeting of the Committee nineteen cases were considered, and grants amounting to £172 voted to eighteen of the applicants. The following is an abstract of the cases relieved:

1. Widow, aged 60, of M.R.C.S. Supported herself for some years after the death of her husband by acting as housekeeper, etc., but is now in failing health. Expects to be elected to a pension from another society in a few months, and is temporarily provided with a home by a relation who can ill afford to help. Asks for a small grant towards the expenses of the home. Voted £5.

2. Widow, aged 38, of M.R.C.S., L.R.C.P. At husband's death about four years ago the small estate was left in trust for the elder child, now aged 9 years, and applicant has been unable to earn a living because compelled to give constant attention to a younger child. Her father, too old for work, and living on his savings, has given them a home, but cannot continue to do so unassisted. Voted £5.

3. Daughter, aged 58, of late M.R.C.S. Maintained herself for several years as a companion, but has recently broken down in health, and is quite unfitted for any permanent employment. Relieved twice, £24. Voted £12.

4. Daughter, aged 61, of late M.R.C.S. Supplements a pension of £21 a year by needlework, etc.; sight failing. Relieved six times, £72. Voted £9.

5. Widow, aged 75, of L.R.C.P.Edin. Supplements an old age pension by letting lodgings; has recently had an acute illness of several weeks' duration. Relieved once, £12. Voted £12.

6. Daughter, aged 42, of late M.R.C.S. Is a complete invalid, and practically dependent on a sister who, having been obliged to nurse her mother, has been unable to earn for some months past. Relieved three times, £30. Voted £12.

7. Daughter, aged 57, of late M.R.C.S. Has been unable to support herself owing to ill health for many years past, and is dependent on two half-sisters who have to earn their living. Relieved eight times, £71. Voted £10.

8. Widow, aged 67, of M.R.C.S. Quite unprovided for at husband's death a few years ago. Endeavours to support herself by receiving paying guests; slight help from friends. Relieved twice, £12. Voted £6.

9. Widow, aged 64, of L.S.A. Earns about 15s. a week by selling sweets, but has to maintain a delicate daughter who is unfitted for regular occupation. Relieved five times, £60. Voted £12.

10. Widow, aged 84, of M.R.C.S. Only income an old age pension and an annuity of £10. Children unable to help. Relieved twice, £12. Voted £6.

11. Widow, aged 55, of L.R.C.S.Edin. Asks for assistance to remove to a seaside place where a lodger she has had for many years is ordered to live, and where applicant will obtain a larger house for a smaller rent, and so be able to let more rooms. Relieved five times, £47. Voted £15.

12. Daughter, aged £75, of late M.R.C.S. Income £20 a year, and earns a few shillings a week by needlework. Health and sight both failing. Relieved fourteen times, £137. Voted £5, and to be recommended to apply for an old age pension.

13. Widow, aged 40, of M.D.,R.U.I. Receives £25 a year for the benefit of her child, aged 3½, and is given rooms and light in exchange for services as a caretaker. Relieved twice, £20. Voted £5.

14. Daughter, aged 65, of late M.R.C.S. Only income a small allowance from a society for the relief of the blind. Relieved seven times, £66. Voted £12.

15. Daughter, aged 51, of late F.R.C.S. No income. Had a situation as cook, but was obliged to give it up on account of ill health, and finds it very difficult to get employment for which she is fitted. Relieved seven times, £40. Voted £12.

16. Widow, aged 45, of L.R.C.P.Edin. Unprovided for at husband's death a few years ago, and, being lame and in bad health, is unable to obtain a paid post. At present receives a home at a boarding-house for a few shillings a week in exchange for services. Relieved six times, £34. Voted £10.

17. Daughter, aged 37, of late M.R.C.S. Supplements small earnings by letting rooms, by making marmalade, keeping poultry, etc. Health too delicate to allow regular employment. Relieved eight times, £73. Voted £12.

18. Widow, aged 60, of L.R.C.P., L.R.C.S.I. No income, and unfitted for employment owing to the loss of a hand and general bad health. Children unable to help. Relieved nine times, £80. Voted £12.

Contributions may be sent to the Honorary Treasurer, Dr. Samuel West, 15, Wimpole Street, W.

LITERARY NOTES.

WE have received from Messrs. Williams and Norgate a copy of the first number of the *British Review*, with which is incorporated the *Oxford and Cambridge Review;* it is to be issued monthly at the price of one shilling net. The editor is Mr. Richard Johnson Walker. The first number includes a good psychological article, "Falstaff: the English Comic Giant," by Mr. W. L. George; a memoir by Leo Tolstoy on true and false science; and a remarkable paper on "Huxley and the Catholic Faith" by Mr. Cecil Chesterton. "The Opium Thrall," by Mr. Litchfield Woods, suggests De Quincey.

The *Arena* for December, 1912, contains a good article on the life and work of a medical student by "A. R. E." It is a very fair sketch of medical education previous to qualification, written in a light style. "Some time ago," we read, "one of the hospital magazines propounded the question 'Who carries the most side, a dresser starting his work in the hospital, or a freshly qualified man.' We have not yet discovered the correct answer." The writer dwells on the greater popularity of surgery than medicine; perhaps it would have been good had he hinted that physician's work is far too much depreciated by the average student. A further feature about medical education not touched upon here, and little noted elsewhere, is the fact that fifty years ago the student began as apprentice to a qualified man, whilst now he commences his medical education in a college or a hospital. As for hospital life, "A. R. E." clearly writes from experience.

Mr. D'Arcy Power[1] has been supplementing the biography of John Banister, the noted surgeon of Elizabethan times, by a careful study of a picture in the Hunterian collection in Glasgow. The picture represents John Banister delivering the "Visceral Lecture," in 1581, in the Barber-Surgeons' Hall in Monkwell Street, London, and so minute is the detail that a great deal can be made out, much more than if the impressionist school of artists had been at work in those days. We may indeed be thankful to Mr. Power for showing how much can be learnt from such a study, and through him to the late Dr. Frank Payne for suggesting to him the investigation of this particular picture. It is an open question whether the solution of many problems in medical biography and history may not lie hidden in old portraits and the like; medical iconography is a little worked and, it may be, a rich mine. Mr. Power, at any rate, has done some profitable digging in it. It is an interesting fact that Banister practised both as a physician and as a surgeon at a time when the surgeons were still servants to the physicians. Perhaps this may account for a curious passage in the commendatory preface written by Banister's friend, William Goodrus, for the former's book, *An Antidotarie Chyrurgicall*, published in 1589. It would seem that Banister had enemies; at any rate, here is what Goodrus writes:

> What their malice hath been able to achieve against you hethertoo, you have good experience; it is not to be hoped of them that time to come will bring more prosperous windes for their sayling, although they threaten, feare them not: A wise man said, Those that proudlie threaten others, doe eyther suppose themselves to be Gods, or els thinke that those things which they threaten others with, cannot fall upon themselves. . . . The Quaile is said to bee most delighted to feede on venimous seedes: and so is the evill tonged man in casting forth venimous speaches, thus envie alwaies traceth vertue, and treadeth upon her heeles. . . . Plinie saith, the Camelaeon hath verie great lunges, but nothing els within her bodie, so (saith hee) there be some that beside their bosting and swelling ostentation have nothing to be found in them . . . but like as the Maidenhaire, though it bee sprinkled or dipped in water, will nevertheless look still as though it were drie, no more shall reproche and infamie (though it be notablie attempted) cleave or sticke unto a good man.

So with strange zoological and botanical figures Goodrus encourageth his friend Banister against his enemies. But who were they? Perhaps they were only the almost inevitable crowd of unwilling witnesses to all successful men, perhaps there was a particular reason for their existence. Perhaps Mr. D'Arcy Power can find out for us; again, perhaps, it is not worth his while to try or ours to inquire.

Le Nourrisson (The Nursling) *Revue d'Hygiène et de Pathologie de la Première Enfance* is the name of a new serial of which the first number appeared this month; it will be issued, we are informed, six times in the year. The editor in chief is Professor Marfan, Physician to the Children's Hospital, Paris, and he is assisted by Drs. Apers, Aviraguet, Boulloche, Hallé, Lesage, Renault, Triboulet, and Weill-Hallé. Each number will contain at least one article written by a member of the editorial committee above named. The first number includes a paper by Marfan on a case of congenital stricture of the pylorus, with considerations on infection of gastric origin, and another by Aviraguet on control of the rearing of the infants of the poor, in which the author dwells on the legislative and administrative aspects of the question. M. Apers contributes an excellent critical review on the temperature of the newborn at term and the newborn premature child. Under the head of Médecine Pratique Dr. Triboulet writes on Ziehl's fuchsin as an external application in the treatment of pyodermitis, interesting when we remember the obstinate nature of impetigo and allied pustular affections. Lastly, there is a copious report of current writings in the form of abstracts, a valuable feature in a publication of this type, which deserves to prove successful. The annual subscription is Fr. 12; the price of each number is Fr. 2; the publishers are Messrs. J. B. Baillière et fils.

Gratitude has been defined as "a lively sense of favours to come," but the feelings of the convalescent patient towards the doctor who has cured him are usually of a more disinterested character. The sincerity of Louis XIV's gratitude to the physicians who attended him during his frequent illnesses is testified by the gifts he showered upon them; and even the kingly generosity of *le roi Soleil* scarcely surpassed that of Robert II of Scotland, the grandson of Robert Bruce, whose "beloved and faithful Farquhar Leech" was the recipient of numerous and substantial tokens of regard from different members of the Royal family. Even the King's younger son, the savage "Wolf of Badenoch," gave evidence of an unusual amount of kindly feeling in his dealings with his father's favourite physician, whose sister, according to some authorities, was his own "handfasted" wife and the mother of his children. We learn from the *Caithness and Sutherland Records*, Part VII, vol. i, recently published by the Viking Society for Northern Research, that on September 4th, 1379, the lord of Badenoch bestowed on the court physician a large tract of land in Sutherlandshire, the gift being confirmed on the same day at Perth by the King in the following charter:

> Robert, by the grace of God King of Scots and all good men of his whole realm, greeting. Knowye that we have approved and ratified and by this our present charter have confirmed that gift and grant which our beloved son, Alexander Stewart, Knight, Lord of Badenoch, made to and conferred upon Farquhar, our physician, of the lands of Melness, and the two parts of the Hope with their pertinents: To be held and possessed by the said Farquhar with all and sundry liberties, commodities and easements and their just pertinents whatsoever belonging to the aforesaid lands with their pertinents or which by any manner of way may justly be held to belong thereto in time coming, as freely and quietly, fully, entirely and honourably in all and by all as is more fully contained and set forth in the charter granted by our said son to the said physician thereupon, saving our service. In witness whereof to this our present charter of confirmation we have ordained our seal to be appended; witnesses, the venerable fathers in Christ, William, and John our Chancellor, Bishops of the Churches of St. Andrews and Dunkeld; John, Earl of Carrick, our eldest son, Steward of Scotland; Robert, Earl of Fife and Menteith, our beloved son; William, Earl of Douglas and Mar, our Cousin; James of Lindsay, our dearest nephew, and Alexander of Lindsay, our cousin, knights. At Perth, 4th September, in the ninth year of our reign.

Some years later Farquhar's skill in treating the King (who, we are told by Froissart, suffered from chronic inflammation of the eyes) was rewarded by another grant of land, confirmed in a charter dated December 31st, 1386:

> Robert, by the grace of God King of Scots, to all good men of his whole realm, cleric and laic, greeting. Knowye that we have given and granted and by this our present Charter have confirmed, to our beloved and faithful Farquhar Leech, for his service rendered and to be rendered to us, the islands of Jura, Calva, Sanda, also Ellangowan, Ellanwilligh, Eileau Roan, Ellanhaga, Ellanwhoera, Ellanegelye, Ellanyofo, and all our islands between Rhu Stoer in Assynt and Rhu Armadale, within the Sheriffdom of Inverness: To be held and possessed by the said Farquhar and his heirs of us and our heirs in fee and heritage by all their right meiths and marches,

[1] *Proc. Roy. Soc. Med.*, vi, Sect. of Hist. of Med., pp. 18-35, 1912.

with all and sundry liberties, commodities, easements, and just pertinents whatsoever belonging to the said islands or which may belong thereto in time coming, freely, quietly, fully, entirely and honourably, well and in peace: Rendering to us and our heirs the services of old, used and customary, therefrom. In witness whereof to this our present Charter we have ordained our seal to be appended; witnesses, the very reverent father in Christ, Walter, by the grace of God Cardinal of the apostolic see; the venerable father in Christ, John, Bishop of Dunkeld, our Chancellor; John, Earl of Carrick, our eldest son, Steward of Scotland; Robert, Earl of Fife and Menteith, and James, Earl of Douglas, our beloved sons; and Archibald of Douglas and Thomas of Erskine, our cousins, knights. At Edinburgh, 31st December, in the sixteenth year of our reign.

Little beyond these few details is known of Farquhar the Healer, or Ferchard, as he is sometimes called. He is said to have been a member of the powerful clan Mackay, and possibly a son of its chieftain, Iye of Strathnaver. This, of course, is more or less conjecture; but it seems tolerably certain that Farquhar found both fame and fortune at the Scottish court. The gifts of his royal patients enabled him to found a landed family of Mackays; and his estates in the north were held by his descendants until the early part of the seventeenth century, when the last of his property passed into the hands of another branch of the same clan.

THE MILK AND DAIRIES BILL.

PROFESSOR SHERIDAN DELÉPINE, Director of the Public Health Laboratory, Manchester, has sent us the following notes on the Milk and Dairies Bill introduced into the House of Commons by the President of the Local Government Board on December 10th, 1912.[1]

The notes deal only with three points about which the writer is specially competent to speak, namely:

1. The danger of failure due to the inadequacy of means of efficient inspection in a large number of districts (Clause 2).
2. The absence of any statement as to the duty of farmers or other persons to notify cases of disease which, though not certainly due to tuberculosis, might on investigation by competent persons be proved to be due to that disease. These doubtful cases are very common, and doubt is often used as an excuse for neglect.
3. The absence of reference to the means of obtaining reliable information regarding samples of milk collected by Medical Officers of Health or Veterinary Inspectors.

Past experience has shown that whenever adequate measures have been successfully applied to the control of a milk supply, bacteriological examinations by competent bacteriologists working in suitably equipped laboratories have been essential to success. Co-ordination in the work of the medical officer of health, bacteriologist, and veterinary inspector has not been less essential. Neither the medical officer of health nor the veterinary inspector is (generally speaking) competent to do the bacteriological work, nor, if competent, could he give the time necessary to that work without neglecting his primary duties.

The following suggestions are made in order to meet these omissions. They are put in the form of addenda or corrigenda for the sake of clearness, but without any desire to indicate what the wording should be. Nor has any attempt been made to indicate all the passages which the suggested alterations would affect.

1. INADEQUACY OF MEANS OF EFFICIENT INSPECTION IN MANY DISTRICTS.

Clause 2 (p. 2, line 35)—"And in other cases to the Council of the district in which the dairy is situated." . . . *Add* something to that effect . . . provided that the said Council can command the services of a medical officer of health *devoting the whole of his time to the duties of his office* and of a veterinary surgeon or inspector *recognized* for the purpose of this Act (or Section) by the Board of Agriculture and the Local Government Board, and devoting the *whole of his time to the duties of his office.*

Failing which the said Council shall make such arrangements as those indicated in Clause 10 . . . with the county or county borough or other local authority commanding the services of full-time medical officer of health and veterinary inspector *recognized by the Board for the purpose of this Act.*

2. NECESSITY OF NOTIFICATION OF DOUBTFUL CASES.

Clause 12 (p. 6).—Somewhere in that clause, or immediately after that clause, or elsewhere, the following provisions should be made:

If a person (owner, farmer, veterinary attendant) does not notify to (the proper authority) the presence of any cow affected with some enlargement or induration of the udder or general wasting, the cause of which is not known to him to be *certainly* other than tuberculosis, he shall be liable to a fine of. . . .

3. RECOGNITION OF PERSONS COMPETENT TO CONDUCT BACTERIOLOGICAL EXAMINATIONS.

The following additions or their equivalents are suggested:

Memorandum 2.—"The inspection of dairies," . . . *Add: and the examination of cow's milk.*

Clause 2 (3) (p. 3, line 13).—"*And separate samples thereof furnished.*" *Add:* When a bacteriological examination of such samples is needed, *the samples shall be examined by a Bacteriologist* (or Public Health Bacteriologist) *and in a laboratory (recognized for the purpose* by the Local Government Board). (See definition of bacteriologist, Clause 24).

Clause 3 (p. 3, line 22).—"If on any inspection of a dairy." *Add: or on receipt of a bacteriological report on the milk of a dairy.* (I have some doubt as to the need of that addition.—S. D.)

Clause 3 (p. 3, line 30).—"Any report furnished to him by" . . . *Add: the bacteriologist.*

Clause 12 (p. 7, line 12).—"To take for examination." *Add:* by a *bacteriologist recognized for the purpose* (or the Official or Public Health Bacteriologist).

Clause 14 (p. 7, line 36).—"For the purpose of this Act." *Add: a bacteriologist recognized by the L. G. B.*

Clause 15 (p. 8, after line 14).—*Add: The bacteriological examination of samples of milk.*

Clause 24 (p. 13, after line 36).—*Add:* The expression "*Bacteriologist recognized for the purpose of this Act*" (or *Official Bacteriologist or Public Health Bact.*) means.

A duly qualified practitioner, provided with adequate laboratory accommodation and recognized by the Local Government Board as competent to carry out the investigation of milk and other products by microscopical, cultivation, inoculation, and other experimental methods such as are used in investigations bearing upon causation and prevention of disease.

Mr. Asquith has stated in the House of Commons that the Government did not propose to proceed with the measure this session, and added that though he could make no promise for next session, the claims of the bill would certainly be considered.

[1] BRITISH MEDICAL JOURNAL, 1912, vol. ii, p. 1720.

SANATORIUM TREATMENT OF INSURED PERSONS IN GERMANY.

A VOLUMINOUS report has recently been issued on the results of the treatment of insured persons in the Hanseatic towns (Hamburg, Lübeck, and Bremen) in the year 1911.[1] It appears that in that year 6,262 applications for treatment were received, and 420 cases remained over from the previous year; 1,741 patients were admitted to treatment on account of pulmonary tuberculosis, which, with those remaining over from the previous year, gave a total of 2,037 cases under observation. The statistics of individual sanatoriums are elaborately analysed. As an example we reproduce the report on the tuberculosis patients of the Oderberg-Gebhardsheim Sanatorium, which is as follows:

Pulmonary Condition.

1. The slight physical signs present on admission were still present, but of lesser degree, in 253 = 29 per cent.
2. The slight physical signs present on admission were unchanged in 323 = 38 per cent.
3. The marked physical signs present on admission were diminished in 84 = 10 per cent.
4. The marked physical signs present on admission were little, if at all, changed in 188 = 22 per cent.
5. The physical signs present on admission were aggravated in 10 = 1 per cent.

General Condition.

1. Marked improvement in 493 = 57 per cent.
2. Some improvement in 282 = 33 per cent.
3. Little or no improvement in 65 = 8 per cent.
4. Worse in 18 = 2 per cent.

Earning Capacity.

1. For the time practically complete, but may not be maintained, in 642 = 75 per cent.
2. Improvement to an extent to take the patient out of the legally defined class of "Erwerbsunfähige" in 155 = 18 per cent.
3. Unable to work, in the sense of the invalidity law, in 61 = 7 per cent.

The report contains a very large number of tables dealing with almost every aspect of the subject.

[1] Heilbehandlung von Versicherten und Fürsorge für Invalide bei der Landesversicherunganstalt der Hansestädte im Jahre 1911. Lübeck: Werner und Hörnig. 1912. (Post 4to, pp. 95.)

British Medical Journal.

SATURDAY, FEBRUARY 1ST, 1913.

MEDICAL SERVICE IN THE HIGHLANDS AND ISLANDS OF SCOTLAND.

THE summary of the report of the Committee on the Medical Service of the Highlands and Islands, which appeared in recent issues,[1] will, we believe, have interested many readers for different reasons. Many, probably, will have had difficulty in believing that the conditions of medical practice, as detailed by medical witnesses and others, in the evidence given before the Committee, could exist at the present day. But that such conditions exist is made painfully manifest throughout the report. To those familiar with the Highlands and Islands, the revelations of the Committee will not have come as any surprise, and, although the disadvantages and difficulties of medical practice have been known to the different parties concerned, and described in our columns over and over again, nothing has hitherto been attempted by the Government, or other controlling body, to remedy what may to many seem an almost incredible condition of affairs. The Poor Law Commission in its report brought to light the want of proper medical attendance on non-paupers, as well as paupers, in the Highlands and Islands. Once more it has been fully demonstrated that the social and economic conditions at present existing in these areas cannot be paralleled on a similar scale in any other part of Great Britain. Insanitary dwellings, poverty-stricken households, persistent superstition, the economic bankruptcy of whole districts, families wanting the barest necessities of life, and people, both old and young, dying from want of medical attendance—these are some of the conditions mentioned in the report. It is well that this reproach to our administrative methods should have been brought to the notice of Parliament and of the country in a form which cannot be gainsaid. Clearly some means must be devised to remedy the existing condition of affairs, and we are glad to see that the member for Orkney and Shetland has already shown a desire to take the matter up, and feel sure that he will not allow himself to be put off with official platitudes.

At a time when the benefits of the National Insurance Act are being loudly proclaimed by its author and those who support him, the report discloses the fact that the Insurance Act cannot be applied to a large part of the Highlands. "Inquiry was made from time to time," says the report, "as to whether the average crofter would be ready to pay contributions in respect of at least twenty-six weeks—that is, an annual average of 3½d. a week. The invariable answer was that in those impoverished districts contribution without compulsion is unreliable, and even if legislative power to compel were forthcoming, the system would still lack the main guarantee of success—namely, an employer responsible for the employed contribution. . . . We are, therefore, convinced that the industrial conditions of the Highlands and Islands are such as to make the provision of the Insurance Act less operative than in other parts of Scotland, and we foresee considerable trouble in providing medical benefit for fully insured persons far removed from a medical centre, more particularly when it is borne in mind that so large a portion of them are so situated."

What we are more immediately concerned with is the medical aspect of the report. It shows clearly and conclusively the inadequacy of the medical service. Owing to geographical and economic circumstances, regular medical attendance is barely procurable, and those who know the Highlands and Islands will not be surprised to read that probably between 50 and 75 per cent. of illnesses are not attended by any doctor. The figures cannot, of course, be given exactly; but it is a confirmation of this estimate that in many parts of the Highlands the percentage of persons whose deaths are uncertified ranges as high as 80, and that over the whole of the rural insular parts of Ross it was over 47 per cent. In these places, as would naturally be expected, infant mortality is high, and the number of women who die in childbirth is distressing.

Such, then, are the conditions—or at least some of the conditions—which the evidence before the Committee elicited. What, then, is the remedy? One essential factor in any remedial measure is more money, and fundamentally this is really the chief recommendation of the Committee. That a large Government grant must be given is very evident. The administration of this grant may present some administrative difficulty. Two administrative authorities—one central and one local—are recommended. A Government grant would render necessary the creation of a central controlling body, and the recommendations of the Committee show how this could be done. The Committee has had regard to all the medical interests involved, the duties and responsibilities of the public authorities operating in the Highlands and Islands, and the desirability of bringing about, as far as practicable, a consolidation of the various services. It would be necessary, no doubt, that this central authority should act under regulations made by the Treasury.

If the money is forthcoming the Committee has a long programme to suggest for the spending of it; every suggested item of expenditure seems absolutely necessary. First, there is the strongly expressed opinion of the Committee that a minimum income of £300 per annum, with travelling allowance, should be secured to every medical practitioner recognized by the central authority. In the case of several doctors living in a common centre, where it would be in the public interest to arrange that outlying patients should be attended at small fees, it is advised that the doctors should receive an annual subsidy to allow this to be done. Should these two proposals be carried out, the financial position of medical practitioners in the Highlands and Islands would be very materially improved, and there would be more inducement for men to remain in the Islands much longer than is at present the rule. Other recommendations of the Committee would very greatly facilitate the working of a practice in the Highlands. They include the provision of small cottage hospitals, the institution of a general and special nursing service, the provision for every person below a certain income of medical attendance on terms adapted to his economic condition; specialized medical service, such as special local consultations, local assistance at operations, dental treatment, eye treatment, and so on. The

[1] January 11th, pp. 98-99; January 18th, pp. 126-129.

need for special travelling allowance for doctors and nurses is also recognized, as also the provision of an ambulance service available in the district for sick or disabled persons, and the extension of telegraphic and telephonic facilities in widely scattered areas.

It is clear enough that the recommendations of the Committee are most moderate, and that the lot of the doctor in the Highlands and Islands and the efficiency of the medical service will be vastly improved when they have been carried out. We have every reason to believe that the Committee is wholly in sympathy with the profession, and recognizes that the conditions under which medical practice is at present carried on in the Highlands demand urgent and liberal consideration.

We give this week (p. 229) a summary of the very valuable appendix to the Committee's report by Dr. Leslie Mackenzie, medical member of the Local Government Board for Scotland. He indicates a way by which the recommendation of the Committee with regard to the creation of a central authority could be carried out, and his suggestions are the outcome of many years' experience in matters connected with public health work; they will, we doubt not, carry much weight with the Government in the drafting of the scheme which it is now under a distinct obligation to propound without delay.

STIMULATION OF REPAIR.

AN account was given some months ago[1] of the curious and interesting experiments conducted by Dr. Alexis Carrel in the Rockefeller Institute for Medical Research, New York, on the growth of portions of mammalian tissue after complete separation from the body. Connective tissue lived and grew, was cultivated as it were, in plasma, and the heart of a chick went on beating for as long as one hundred days. He has recently published some further information as to the nature and properties of the plasma used.[2] The research seems to have had its origin in the speculation that it was possible that certain modifications in the internal economy of the tissues might bring about increased multiplication of their cells and so, perhaps, a more rapid healing of aseptic wounds or fractured bones. The results of some preliminary experiments on animals favoured the theory, but showed also that the living organism presented conditions too complex to afford probability of precise conclusions. The method used by Harrison for studying the growth of the central nervous system of frog embryos in a drop of lymph then suggested itself, and in 1911 Carrel and Burrows observed that the growth of chicken tissues was more rapid in a culture medium to which extracts of the Rous chicken sarcoma or of chicken embryo had been added. It was in the course of these researches, or as a consequence of them, that Carrel made the observation to which we referred last July.

His more recent paper deals mainly with an attempt to estimate quantitatively the influence of tissue juices on the growth *in vitro* of connective tissue. A hypotonic plasma was obtained by adding two volumes of distilled water to three volumes of normal plasma. Extracts were made from chick embryos from six to twenty days old, of spleen, kidney, and muscle of the adult chicken, of the Rous sarcoma, of thyroid gland, spleen, and muscle of the adult dog, and of the spleen of the adult rabbit. The tissues were cut into very small fragments or cut and ground with sand in a mortar, or cut, ground, and frozen and then put for a short time in an incubator at 38° C. They were then placed in tubes and one-third of a volume to four or five volumes of Ringer's solution added. The tubes were kept in cold storage for varying periods and were then centrifugalized. The culture medium was made by adding one volume of the supernatant fluid to two volumes of hypotonic plasma. The tissue cultivated was in most instances a fragment of the ventricular wall of the heart of a chick embryo seven to fifteen days old, but fragments of skin were also used, and fragments of the periosteum of the dog. In estimating the effect of the various tissue extracts used, the area of the ring of new tissue formed around the fragment was calculated in relation to the diameter of the original fragment; as the thickness of the ring could not be exactly ascertained, it was not generally taken into account. In every experiment the fragments of heart, skin, or periosteum grew more rapidly in the plasma containing an extract than did the control fragments in hypotonic plasma without addition. The acceleration of growth was greater when the mixture of tissue and Ringer's solution was allowed to remain in the refrigerator for twenty-four hours or several days before being centrifugalized; in one instance in which embryonic pulp had been thus preserved for twenty days the area of new connective tissue formed in twenty-four hours was thirty times larger in the cultures containing the extract than in the controls. The extracts of tissues cut in small fragments mashed and frozen were generally very active, and embryonic tissue gave the most active extracts, though extracts of adult spleen and the Rous sarcoma fell only a little behind. Extracts of kidney and heart were much less active, while those of connective tissue and of blood corpuscles caused a slight acceleration only. The influence of extracts of thyroid gland and muscle of the dog on the growth of periosteum was very marked, the thyroid extract being the more active. The power of an extract to stimulate a growth was observed only in respect of tissues of another animal of the same species, and seemed therefore to be specific. The activating power of the extracts was diminished by heating to 56° C., and destroyed by heating for ten minutes to 70° C. Experiments with extracts of chick embryo and of the Rous sarcoma diluted with Ringer's solution showed that their power was not diminished by filtering through filter paper—was, indeed, slightly increased if the extract contained much cellular débris. The activating power of extracts was greatly diminished by filtering them through a Berkefeld filter and entirely removed by a Chamberland filter.

These experiments, as Carrel suggests, though they may have no immediate practical application, may indirectly lead to the discovery of some of the factors determining the growth of tissues, in elucidating the dynamics of the cell, and in throwing light, ultimately, on the mechanism of the cicatrization of wounds.

Dr. Carrel more recently has reported to the Académie de Médecine in Paris[3] the success of another experiment which will probably produce a greater impression at first sight than his other observations, though not, as it seems to us, of so great intrinsic scientific significance. He has succeeded in keeping alive and active for as long as

[1] BRITISH MEDICAL JOURNAL, July 20th, 1912, p. 135.
[2] *Journal of Experimental Medicine*, January, 1913.
[3] *Bulletin*, January, 1913.

thirteen hours practically the whole of the abdominal and thoracic viscera of a mammal entirely separated from the head and body. In most of the experiments the animal used was a cat. The animal was anaesthetized with ether, and the skin of the neck, thorax, and abdomen sterilized. All the subsequent proceedings were carried out with aseptic precautions. The oesophagus was ligatured and divided. The trachea was cut across, and an india-rubber tube introduced to permit artificial respiration to be performed by the method of Meltzer and Auer. The abdomen was opened, and the aorta and vena cava tied, and severed near their bifurcation. The small intestine and the ureters were next divided, and then all the posterior branches of the aorta and vena cava were tied and cut. The abdominal viscera were thus completely detached from the abdominal walls, and remained connected with the thoracic organs by a pedicle consisting of the aorta and vena cava. The thorax was opened, and the diaphragm separated from the costal wall; the innominate arteries, the superior vena cava, and the azygos were tied and cut, and the animal died. The vagus, sympathetic and phrenic nerves were next divided, as also the posterior branches of the thoracic aorta. Generally at this stage the cardial pulsations were feeble, and the arterial pressure very low. The thoracic and abdominal viscera were then removed in one mass and placed in a basin of Ringer's solution at a temperature of 38° C. As a rule the heart was still beating slowly and regularly, but feebly; the blood pressure was low, and the organs appeared very anaemic; in a few minutes, in some cases, the blood pressure rose, and sometimes became almost normal. As a rule, some blood from another cat was infused at this stage, whereupon the blood pressure rose, the heart became regular at 120 to 150 a minute, and the lungs assumed a pink colour. Pulsation in the aorta was strong, and could be seen and felt in the arteries of the stomach, spleen, kidneys, and ovaries, and peristaltic contractions were visible in the stomach and intestines; the viscera, in fact, resumed their normal appearance. This "visceral organism" was then placed in a box full of Ringer's solution, covered with a piece of thin Japanese silk, and protected by a sheet of glass. The tracheal tube was brought through a hole in the side of the box, a tube fixed in the oesophagus, by which water or food could be introduced into the stomach through another, and a tube passed into the cut end of the intestine through a third. The box was then kept in an incubator at 38° C. The viscera continued to live and to present a normal appearance. The heart was beating strongly and normally, the intestines showed peristaltic contractions and emptied itself through the artificial anus, and bile and intestinal mucus were afterwards evacuated. In one experiment, in which the stomach was full of meat when the animal was killed, digestion continued normally for several hours. In some experiments the "visceral organism" died rather suddenly in three or four hours, but in most it continued active for ten, eleven, and even as long as thirteen hours. Death was preceded by irregularity and feebleness of the heart, which finally stopped suddenly. Dr. Carrel believes that the study of the visceral organism under these artificial conditions may help in the solution of many physiological and chemical problems. However this may be, the experiment is of interest, as M. Pozzi, who related Dr. Carrel's observations to the Academy, observed, in showing how independent is an animal's life of relation of its vegetative life.

THE ECONOMIC VALUE OF SANATORIUM TREATMENT.

THE question is often asked whether sanatorium treatment is or is not of any value to the State, and a pessimistic answer is frequently given. Every one has experience of success in individual cases, but the general economic effect upon the community of the temporary rehabilitation of tuberculous persons can only be estimated by the study of statistics ranging over a wide field of inquiry. The results of such study carried out under the auspices of the Bureau of Labour at Washington have recently been published,[1] and will help towards the formulation of a trustworthy answer to the question to which we have referred. Under the title of Care of Tuberculous Wage Earners in Germany, a comprehensive analysis of the practical experience gained in Germany since the year 1900 is presented, with comments and comparative statistics. It deserves close attention in this country, where too little has as yet been done to co-ordinate the various agencies for dealing with tuberculosis.

By a law which came into force on January 1st, 1900, power was given to insurance institutions in Germany to cause their tuberculous beneficiaries to undergo a cure, compulsory in the case of unattached persons, but requiring the consent of the individual when possessed of a home or responsible belongings. From small beginnings, a widespread system of sanatoriums has been established during the past eleven years, and at the present time there are no less than ninety-nine such institutions scattered throughout the German Empire. The Grand Duchy of Baden appears to have been active especially in the foundation of tuberculosis dispensaries, by means of which all patients are directed into the most appropriate institutions for their needs. The greater number of these institutions have been built and maintained by the invalidity insurance authorities at a very considerable cost, and, in addition to the ordinary sanatoriums, many private establishments have sprung into being during the same period.

The needs of tuberculous children have also been cared for, and the segregation of advanced cases has been attempted. Dispensaries and polyclinics for the observation, regulation, and study of the disease have in like manner kept pace with public demand, and the whole system is under the supervision of the German Central Committee, which has the necessary means at its disposal, derived from subscriptions, donations, and the Imperial subsidy. The antituberculosis movement in Germany is thus thoroughly organized and sustained by ample funds. It should be noted that the life insurance companies are on a different footing to the invalidity insurance institutions which operate under the law of 1900. They none of them undertake the care or treatment of their tuberculous policy holders. The payment of death claims by such societies is quite distinct from the payment of invalidity or disablement benefit under the law.

Turning now to the results which have been achieved by the vast expenditure of capital that has taken place during the past decade, a very large amount of material is available for analysis. More than 270,000 individuals of both sexes have been treated in public institutions at a cost of approximately 4s. 7d. a day each, but against this very heavy expenditure must be placed the saving effected by the relief to the disablement annuity funds of all the sums otherwise

[1] *Care of Tuberculous Wage Earners in Germany.* Bulletin of the United States Bureau of Labour. Washington: Government Printing Office. 1912.

due to those who have been rehabilitated as wage-earners by the treatment received. So satisfied have the central authorities been with the results, that provincial and communal authorities have followed their lead and have devoted large sums of money to the rehousing of their working-class population, fully recognizing the direct relation between defective dwellings and impaired health. This movement cannot fail to react to the advantage of the German people as a whole, and if the present estimate be borne out in future it is expected that not less than 75 per cent. of the wage-earning sufferers from early tuberculosis will be rendered capable of service for many years at comparatively small cost. Apart from the purely economic question, the restored health of the bread-winner must have far-reaching influence upon the stability of family life.

It is notable that the effort to segregate the advanced cases of tuberculosis has not met with complete success. The dying consumptive, although he be a constant source of danger to those about him, prefers to spend his last hours with his belongings. Comparison with the system in vogue in the United States shows that much has yet to be done before the results shown in Germany can be rivalled; but the elaborate investigation which the Washington Labour Bureau has undertaken is deserving of the closest scrutiny, containing as it does the fullest available statistics and information upon a subject which must appeal to all classes of the community.

CANCER OF THE KIDNEY.

THE kidney is not uncommonly the seat of malignant tumours of a rather perplexing type, not only from the point of view of diagnosis, but also owing to the problems their histogenesis presents, and the wide variations they exhibit in microscopic characters. Leaving on one side the peculiar sarcomas that arise in infancy, the other malignant tumours were formerly variously labelled as carcinoma, sarcoma, and endothelioma, and the confusion remained long after Grawitz, now nearly thirty years ago, propounded the theory that the great majority of them were derived from aberrant parts of the suprarenal gland. They are now generally classed under the term "hypernephroma," and until recently Grawitz's theory was unquestioned. It is indubitable that small bodies composed of cells bearing an exact histological resemblance to those of the zona fasciculata of the adrenal may be found not only in the neighbourhood of that organ and on the under surface of the liver, but also in the cortex of the kidney, along the course of the ureter, in the broad ligaments, and in the spermatic cord. An interesting paper on such adrenal rests was contributed to the *Birmingham Medical Review* of May, 1910, by Mr. Percival Cole. The frequency with which these "rests" have been found in the cortex of the kidney, combined with the influence of Cohnheim's theory of the origin of malignant tumours from embryonic inclusions, gave colour to the supposition that the renal hypernephromata arose from aberrant portions of suprarenal tissue, and this was almost elevated into a certainty by the observation that these tumours were composed of cells identical with adrenal cells, not only in microscopic appearance and arrangement but also in that they contained doubly refractile particles, fats, glycogen, and metachromatic nucleoli. Such cells have long been supposed to occur only in adrenal parenchyma, and they bear no resemblance to those of renal epithelium. It is a striking fact, however, that true primary tumours of the adrenal gland itself are very uncommon, and with the possible exception of a tumour in the liver described some years ago by Lorrain Smith and Mair, we cannot recall any case of a tumour arising from adrenal rests in other situations.

These hypernephromata have a very characteristic appearance: some are definitely encapsuled, while others invade the substance of the kidney; they generally all show a peculiarly mottled appearance, at parts yellow, at other parts dark red, owing to haemorrhage, and again dull grey or gelatinous, owing to necrosis. It has been pointed out recently by Stoerk that in cirrhotic kidneys the undoubted renal epithelium may undergo changes and present the appearance of the cells characteristic of hypernephromata. In many other pathological conditions as widely separated as proliferative mastitis, ovarian cysts, and myeloma, groups of cells may occasionally be found with the histological characters of adrenal cells, and doubts are beginning to accumulate whether, after all, the so-called hypernephroma is really derived from an adrenal rest. In this country, Dr. J. Shaw Dunn has been one of the foremost opponents of the theory of Grawitz. He regards the tumours as originating from renal epithelium, and therefore to be classified as carcinomas. He has been able to demonstrate in a minute renal cyst composed of typical Grawitz cells a direct connexion with the tubules. It may be remarked, too, that hypernephromas seem to occur most frequently in the lower pole of the kidney, whereas adrenal rests are more common in the upper part.

The degree of malignancy of these tumours is said to vary considerably, but here, as in other malignant neoplasms, it is merely a question of the extent of dissemination at the time of removal. Secondary nodules occur in the lungs and liver and less frequently in the bones, and, in contrast to other types of carcinoma, the cells are carried by the blood stream and not by the lymphatics. In a lecture given at the Cancer Hospital, Brompton, on January 29th, Mr. R. H. Jocelyn Swan showed specimens of 12 cases of these interesting tumours, 10 of which he had removed by operation. In 7 out of the 10, haematuria was the first symptom that attracted the patient's attention; in 2 haematuria developed later than the pain; and in 1 the presence of a tumour was detected before either pain or haematuria had supervened. This is interesting in view of the remark of Sir John Bland-Sutton in the latest edition of his book on *Tumours Innocent and Malignant*, that "these tumours do not give rise to haematuria because the tumour does not invade the pelvis. This is the most striking fact in their clinical history." Some of Mr. Swan's tumours did invade the pelvis, but in at least one of them, in which case haematuria was the earliest symptom, the tumour seemed to be definitely encapsuled, and did not penetrate far even into the cortex. This tends to show that the occurrence of haematuria is not necessarily related to encroachment on the pelvis. All Mr. Swan's cases were upwards of 40 years of age, and it is difficult to conceive, if the tumours were traceable to adrenal rests, that the potentiality of malignancy should have remained dormant so late in life. Recurrences took place in 4 of the series in from three months to two years in the vicinity of the original tumour or in the lungs or liver. At the same lecture Mr. Leitch demonstrated a renal tumour, which showed at parts the typical structure of a pure malignant adenoma, and at other parts

typical Grawitz structure, with all gradations between the two, this tending further to confirm the origin of these tumours from renal epithelium.

Two very remarkable cases of renal cancer are recorded by Dr. Herbert French in the last number of *Guy's Hospital Reports*. The first occurred in a girl 6½ years of age, and was associated with the development of the pubic hair and genitals from the age of 8 months. She experienced a sudden attack of abdominal pain and vomiting, and died after operation. Numerous secondary deposits were found in both lungs, which were invaded from the pulmonary arterioles. The tumour was a renal hypernephroma. The other case occurred in a man of 45, and was considered to be a carcinoma. The symptoms were indefinite, or rather, the abundance of symptoms was too perplexing for diagnosis, and the clinical report given will supply problems enough to baffle the acutest diagnostician. At the necropsy the growth was found to have made its way along the renal vein, up the vena cava, and into the right auricle as an unbroken thrombus.

THE NEXT FIGHT: CONTRACT MEDICAL ATTENDANCE ON UNINSURED PERSONS.

Now that the rates for medical attendance on persons insured under the National Insurance Act have been, at any rate for the present, fixed, a question of hardly less importance faces the profession and presses for solution. We allude to the rates of payment for contract medical attendance on the uninsured. A case which has just happened in London will serve as an illustration both of the dangers to be feared and of the correct method of dealing with them. The Provident Association of Warehousemen and Clerks, having its offices in Cheapside, London, became an approved society, and, in consequence, found itself obliged to make arrangements for medical attendance on a considerable proportion of its members who, for reasons of age, disability, or income, have not become insured persons, or are not entitled to medical benefit under the Act. It applied to its former medical officers, who had resigned their contracts as requested by the British Medical Association, and asked them to undertake the treatment of this residue at the previously accepted rate of 6s. a member per annum. The Provident Association was obviously surprised when a large number of these practitioners, owing to organized action taken on the initiative of Dr. J. A. Butler and Dr. J. Galt, declined to accept these terms, and have demanded rates of 9s., including medicine, for those of the members who are in receipt of less than £160 per annum, and 10s. 6d. for those earning above that amount. The Provident Association does not see, or does not wish to see, that such a demand is perfectly reasonable, and that practitioners who accept less would, in fact, be stultifying themselves in the eyes of the public. The members for whom the fee of 6s. is offered are, in the nature of the case, either not so fit physically as the insured members of the Provident Association, or they are financially better off, and on either of these grounds it seems obvious that there is a perfectly fair claim for, at the very least, the 9s. assigned under the Government Insurance scheme for medical attendance and medicines provided for the insured. The State Sickness Insurance Committee of the British Medical Association has sent a circular letter to the medical officers of the Provident Association urging them to adhere to their just demands, and at the same time promising the support of the Association to the fullest possible extent. It is hoped that no practitioner will be so ill-advised as to accept the inadequate terms now offered by the Provident Association. There are several morals to be derived from this incident, but the chief is that the profession will have to be very careful in its dealings with this subject if it is not to fall into serious inconsistencies and set up precedents which will be extremely awkward in the future. It will have been useless to have fought a long and expensive battle for adequate remuneration under the Insurance Act if the profession is prepared at the first demand to accept inferior rates of payment for the same kind of work to be done on behalf of people at least as well off as the insured, many of them being also old and ailing. The insured, being subsidized by their employers and by the State, are precluded from any claim on the charity of the profession, but it may be necessary in dealing with some classes of the uninsured to make allowances on the ground of poverty; the profession has always done so and will doubtless be willing to continue to do so. But the plea of poverty does not apply in cases like that dealt with above, and even where it does apply it must be made perfectly clear that the lower rates charged for contract medical attendance on the poor uninsured shall not be used as a precedent if, at a later date, it is proposed to include them in the insured classes. It is in order to forestall attempts of this kind that the profession must be on its guard in all arrangements made for contract attendance on uninsured persons. While making due allowance for economic conditions, the profession must see to it that the rates now fixed bear some more reasonable relation to the work expected than has been the case in the past. This can only be accomplished by increasing vigilance on the part of the profession in each locality, and by consultation in each Division before local rates are fixed. There must be no individual arrangements made in the bad old way, without a thought of the influence on others and on the general situation.

ATTENDANCE ON AGED AND INFIRM MEMBERS OF APPROVED SOCIETIES.

ANOTHER aspect of the question discussed in the preceding note calls for mention, since it seems to be the cause of much misunderstanding. Section 15 (2) (*c*) of the National Insurance Act states that the Regulations shall require the adoption by every Insurance Committee of such a system of administration of medical benefit as will secure the provision of medical attendance to members of friendly societies, which become approved societies, who were either (*a*) not entitled to medical benefit because they were 65 or upwards at the commencement of the Act, or (*b*) not insurable because they were permanently disabled at that date; the provision is to be made on the same terms as to remuneration as those arranged with respect to insured persons. Regulation 51 leaves it optional for such persons, or their approved societies on their behalf, to claim their medical attendance under the arrangements which the committees are required by the above-quoted section to provide. Circular A.S. 75 of the Commissioners, headed "Medical Benefit," in referring to the fact that Insurance Committees are required to make the above-mentioned arrangements, says, "This is, however, an option granted to societies, and the Act does not make it obligatory upon a society to avail itself of this provision, nor does it either expressly or by implication require any payments made by a society in respect of this treatment to be on the same scale as in the case of insured persons if the society can obtain treatment at a lower rate." Whatever construction may be forced upon an apparently straightforward clause of the Act, it is beyond doubt to those who know the history of this clause that all attempts on the part of friendly societies—and they have been very common—to secure attendance for these classes of their members at lower rates, are an attempt to get behind an understanding which was come to between representatives of the friendly societies

and representatives of the Association. This understanding was reached at a conference held at the Treasury, with the Chancellor of the Exchequer in the chair, on October 16th, 1911, when a large number of leading representatives of the friendly societies were present, including Messrs. Moffrey, McNicoll, Lister Stead, and Marlow. It was regarded at the time by the friendly society representatives as a distinct concession on the part of the Association, and they not only expressed their gratitude for it, but, so far as they could bind their societies, agreed in return not to reopen the demand that the administration of medical benefits should be handed back to the approved societies. The representatives of the societies had felt that there was a danger that the medical profession, if it undertook the proposed statutory obligation to treat the insured, might decline to attend the aged and infirm members of the societies except at higher rates, and there is no doubt they regarded the embodiment of the understanding in the Act as a distinct gain. This arrangement was reported to the Special Representative Meeting in London in November, 1911, and was there endorsed (Minutes 30 and 31), but it would appear that the heads of the friendly societies have neglected to make the understanding on the subject known to their local branches, for from many quarters we have been informed that attempts are being made to secure attendance on these aged or infirm members at the old rates. The State Sickness Insurance Committee has already reminded all Division Secretaries of the requirements of the Act, and has urged that the local profession should take steps to protect its legitimate interests. It need not be feared that in doing so any hardship will be inflicted on the friendly society members referred to. The Insurance Committees are charged with the duty of seeing that they get their medical attendance at the same rate as the insured get theirs; the societies are bound to provide it for them; the physical condition of the persons concerned precludes any appeal for lower terms except on the ground of poverty; and the reserves which have been set free by the operations of the Act leave the societies quite able to meet the extra charge on a small and diminishing class.

CANVASSING FOR INSURANCE PATIENTS.

IF anything could add to the sense of humiliation experienced by many members of the profession owing to the events of the last few weeks it must have been the revelations of the means to which some doctors on the panels have permitted themselves to resort in order to attract insured persons to send the strawberry cards to them for signature, with the intention, no doubt, of using this provisional arrangement as an introduction to a large number of insured persons. We called attention to this matter last week, but information given to the Council of the British Medical Association on Wednesday shows that lapses of this nature have been more common than was known last week. Nothing can excuse such a course of conduct. It may be true that the methods recently pursued by the Insurance Commissioners have not reached the high ethical standard which the country has a right to expect from a body of persons to whom functions of great national importance have been confided by the State; it may be true also that these methods appeared to be countenanced by some members of the profession who had no doubt persuaded themselves that the end, which they regarded as good, justified the means. But all this cannot justify the gross departure from the well-recognized ethical rules by which the members of the profession have learnt to govern their relations with each other, which is involved in resort to canvassing by postcards, leaflets, and personal visits to insured persons. Instances of such procedures were given to the Council, and it was also told of the action taken in certain districts by Divisional or Local Medical Committees to recall men, who may have acted without sufficient consideration, to a sense of their duty to their brethren and to the traditions of the profession to which they belong. It is satisfactory to know that these representations have as a rule produced the effect that was to be expected, and that the canvassing cards and leaflets have been withdrawn and the personal canvassing stopped. But we understand, also, that a considerable number of complaints have been lodged with the General Medical Council, and there can be no doubt that, if evidence of such canvassing were advanced, the cases would be investigated by that Council as it has investigated charges of canvassing with regard to contract practice or in other connexions in the past.

THE SUPPOSED DANGERS OF THE TUBERCULOSIS SANATORIUM.

THE provision of sanatorium treatment is slowly proceeding, and some of the difficulties attending it are becoming manifest. One of these difficulties arises from the not unnatural aversion of rural communities to the settlement of numbers of tuberculous persons in their midst. The average dweller in country or suburb has acquired a vague conviction that consumption is infectious, and hence that consumptive people are to be avoided if possible. Very few, however, have taken the trouble to inquire into the conditions under which infection may take place. It is therefore all the more necessary to point out by the light of experience and common sense that such pessimistic notions are not consistent with the proved facts of the case. The two main objections to the establishment of a sanatorium in a new locality may be thus stated: Firstly, the practical risk of infection of local inhabitants; and secondly, the social aversion to the constant presence of invalids. The supposed liability to infection is probably the more potent influence of the two, but when tested by the facts of death-rate statistics, the evidence affords no confirmation of the supposition. In many health resorts, such as Ventnor and Bournemouth, where consumptive persons have congregated for many years, there is absolutely no evidence forthcoming to show that their disease has been communicated to those among whom they have lived. Instances are probably known to every one where one member of a family has alone been affected by tuberculous disease, although living in close association with others. Such cases are indeed far more common than instances of the converse. It has needed a good deal of careful research to bring to light the well-authenticated cases of direct infection in the family circle. The risk to immediate associates being so small, it follows that the actual risk to the community, living under other roofs, is really infinitesimal. The means by which bacilli may be conveyed are now so well known and so easily controlled that the danger of infection is reduced to the common minimum. Although the tubercle bacillus has occasionally been detected in other excreta, every one knows that it is by way of the sputum that infection is most likely to be spread. Already the habit of public spitting has been greatly diminished, and consumptive persons have been educated so to dispose of their sputum as to prevent its diffusion. There remains, however, the social objection, and that also is apt to be greatly exaggerated. In most sanatoriums the patients are in the earlier stages, and present hardly any distressing features. The advanced case—the typical hectic consumptive of fiction—should have no place in a sanatorium, and, if such cases are eliminated, it is probable that few inmates of the sanatorium would be recognized as such at sight. It will be seen that objection has recently been taken to the use of a certain school in Surrey as a sanatorium for insured persons. The grounds of objection urged by the local authorities illustrate the objections often raised. Amongst other points, the possible contamination of a local milk supply is even hinted at. It is assumed that cows can be infected with the human

bacillus, but the fact is ignored that no such infection has ever been proved except by inoculation of enormous doses for experimental purposes. So far from the sanatorium being a danger to the dairy the fact ought to be recognized far and wide that a single cow with unrecognized tuberculous disease may yield infective milk which may be distributed daily to a whole community of children, and may set up those insidious changes in the glandular and alimentary systems which, although known by various names, are essentially tuberculous in origin. The presence of a sanatorium in such a district would lead to the discovery of a danger of this kind, and thereby confer a benefit which would far outweigh the small risk which might arise from the carelessness of an insubordinate patient. In most sanatoriums the neglect of precaution on the part of a patient leads to immediate dismissal, and thus even that slight risk is soon removed. The public places of a country town where spitting may proceed unchecked are, indeed, far more dangerous than the vicinity of a sanatorium. In Australia and in many other countries the general public are better informed on these matters than they are in country places in England. Frankly, we are behindhand in the organization of our antituberculosis campaign, and it is time that prejudice should give place to knowledge and common sense.

MIRABEAU AN ABNORMAL INFANT.

MIRABEAU—the great Mirabeau, Honoré-Gabriel Riquetti, who had so strong an attraction for Carlyle[1] that the latter called him "world-compeller and ruler over men," and made him, so to say, the hero of his *French Revolution* (if that marvellous work can be said to have had a hero)—Mirabeau was almost, if not entirely, a monstrosity at birth. Carlyle, in one of the finest of his Essays,[2] that in which he reviews the eight volumes of *Mémoires biographiques, littéraires, et politiques de Mirabeau*, gives some hint of the abnormalities of this "heir of all the Riquettis" at his birth. "A magnificent, 'enormous' fellow, as the gossips had to admit, almost with terror; the head especially great; 'two grinders' in it already shot!—rough-hewn truly, yet with bulk, with limbs, vigour bidding fair to do honour to the line." S. G. Tallentyre,[3] in his much more recent *Life of Mirabeau*, gives further details of this momentous birth. "Then, in 1749," he writes, "there appeared with a twisted foot, a gigantic head with two teeth already cut, tongue-tied, monstrous and hideous, not merely the greatest of Mirabeaus but one of the greatest of the sons of France. The creature was so extraordinary that the Marquis had to be warned and prepared for his first introduction to him." Carlyle, with his genius for restoring past scenes, says: "The paternal Marquis, to whom they said, '*N'ayez pas peur*, Don't be frightened,' gazed joyful, we can fancy, and not fearful, on this product of his; the stiff pedant features relaxing into a veritable smile." He, whom Carlyle calls "the paternal Marquis," was Victor Riquetti, the representative of an old Florentine family which flourished about Dante's time in North Italy and later in Provence. Many notables had sprung from this line; it was a fine eugenic stock; they were "the Well-born of the World," says Carlyle, and yet here was a most abnormal baby, a most dysgenic result. Such babies are born now and again, and are labelled cases of multiple malformations in the newborn, or are more specifically called fetal rickets; but how comes a Riquetti to be rickety? The writer of Victor's life in the *Biographie universelle*[4] hints that this "Friend of Men" (*L'Ami des hommes*), as he was called, had by his debauchery several times compromised the health of his wife (Marie-Geneviève de Vassan). Antenatal pathology may well have been at work here, poisoning the blue blood of the Riquettis and de Vassans, and leading to this teratological phenomenon in the family annals. Carlyle must have been very far out when he imagined the Marquis Mirabeau looking down joyfully on this product of his; it may have been sorrowfully or shamefacedly, it could hardly have been joyfully, unless indeed he was able to read far into the future, and see that strange "sprawling oaf" with the destinies of France in his hand, the one man capable, had he lived, of chaining the titanic forces of that world-shaking event, the French Revolution. But he was not to live, but to die at the age of 42. Looking out through the window on that last morning of his full-filled but short life, he hailed the sun: "If that there be not God, he is at least his cousin-german," cried he. He was a prodigy at his birth, and he remained prodigious, gigantic, world-compelling, all the days of the years of his life.

[1] Carlyle, *French Revolution*, Bk. IV, c. ii.
[2] Ibid., *Critical Essays*, vol. v, p. 228.
[3] Tallentyre, S. G., *Life of Mirabeau*, p. 4, 1908.
[4] *Biographie universelle*, xxix, p. 89, 1821.

LEPROSY AND GOATS.

THE evidence in favour of regarding goats as a source of leprosy in man has lately been collected by Dr. P. Engelbreth,[1] who holds that leprosy is not transmitted from man to man. The strict isolation of lepers in ancient days and in the Middle Ages, he asserts, did not cause an appreciable reduction of the disease. It spread rapidly, and, though isolation was maintained with equal strictness in England, Central and Southern Europe, the disease disappeared only in the two former areas. Further, it does not increase in such countries as Egypt, where isolation is not enforced, while it appears in places where it has previously been unknown. Out of 512 marriages, of which records were obtained, leprosy subsequently developed in the healthy mate of a leper in 17 cases only. The presumptive evidence of the existence of an intermediate host is therefore strong, and for the following reasons Dr. Engelbreth suspects the goat of acting this part. Leprosy is a disease of mountainous countries where the goat is bred. In ancient times, Egypt, Arabia, Asia Minor, and India were centres of leprosy and goat breeding. Both goats and leprosy were imported from Asia Minor into Greece, whence they were simultaneously transmitted to Italy and Spain. In the time of Charlemagne, goats were far more numerous than cattle and sheep; but in the sixteenth and seventeenth centuries, goats were largely ousted by sheep, whose wool rose in value. As goats became scarce, leprosy began to disappear. This coincidence was, he says, most striking in Denmark, where, about the year 1400, flocks of 50 to 200 goats were kept on every farm, and where there were twenty leper hospitals. Owing to their ravages on the woods, goats were expelled in 1473 from Fyen by Christian I. In 1541 a war of extermination was waged against them throughout the country, and fourteen years later, Christian III was able to abolish all the leper hospitals, and Dr. Engelbreth estimates that fourteen years is the average term of a leper's life. Norway, however, has kept both her goats and her lepers, and in 1848 there were over 2,000 lepers and about 500,000 goats. Now, the tale of goats has been halved, and that of the lepers has been reduced to 200. All the countries in which leprosy still exists are also goat-breeding countries; and in America, where leprosy was unknown before Columbus, the distribution of leprosy corresponds with the prevalence of goats. The parts colonized by the Spaniards, the Portuguese, and negroes have both goats and lepers; while the northern states, which were colonized by the English, possess neither. In a paper published by Hertha in 1912, two forms of tuberculous disease in the goat have been described. The one is identical with bovine tuberculosis; the other is totally different, and is characterized by greyish-yellow, firm, but

[1] *Hospitalstidende*, October 9th, 1912.

not caseous, nodules in the internal organs. These nodules closely resemble those found in the internal organs of lepers. Whether the infection is carried from goat to man by the finger-nails of the person who tends the infected goat, or by the milk, Dr. Engelbreth does not pretend to decide; but he thinks that much may depend on the extent of the disease in the goat, and on the opportunities for contact with man. He suggests that lepers may again transmit their disease to goats, and, if this be so, the isolation of the former may yet be of use. But he attaches more importance to a campaign against infected goats by diagnostic injections of tuberculin, which causes a reaction in lepers as well as in the tuberculous. He further suggests that a tuberculin prepared from infected goats should be given to the surviving lepers, whose numbers he computes at 300,000, as he believes that in this way a speedy extinction of leprosy would be brought about.

EARTH-EATING.

THAT mine of curious information, *Notes and Queries*,[1] whose vitality has not been diminished by the loss of the services of its distinguished editor, the late Mr. Joseph Knight, has been publishing lately a series of letters bearing upon the subject of earth-eating, and has elicited some new, and brought forward some old, facts regarding this strange practice. A query as to earth-eating among Swedish tribes started the discussion, and although to it no direct answer has yet been forthcoming, some information has come in regarding geophagy in several other countries—in the Sudan, for instance, and in India, China, the Malay Archipelago, and elsewhere. Curiously enough, the nearest answer to the original query about Sweden has come from Japan, the correspondent pointing out that Bennett and Murray (*Handbook of Cryptogamic Botany*) state that "in some countries, such as China, Japan, Siberia, Lapland, etc., they [the fossilized siliceous shells of diatoms] form, cemented together by salts of lime, the edible earths which are mixed with meal to make a kind of flour." Probably it was the allusion to Lapland in this quotation which had been lingering in the mind of the querist who raised the subject. Several replies touch upon earth-eating in times of scarcity; there is, for example, the statement that the Japanese Ainus used to eat a paste made of a mixture of diatomaceous earth and starch in famine years; and another correspondent tells of a native he met in North India who ate a mixture of clay and black ants, and found it pleasant on account of the formic acid in it. The Indians of Guatemala eat a yellowish edible earth containing sulphur, taking it not simply as a food, but also as a prophylactic against disease. Is this, we wonder, the old superstition of the sulphur ball for rheumatism cropping up in Guatemala? The practice of geophagy seems to be particularly common in the islands of the Malay Archipelago; the earth eaten there consists of bituminous clay, is called *ampo*, and is offered for sale in the markets of Java and other places. It is stated that "women in delicate health eat sometimes *ampo* because it is supposed to benefit their babies yet unborn." The practice just referred to may have some connexion with what has been called the perverted appetite (or pica) of pregnant women, and it is just possible that this desire for earthy materials may represent a real physiological outcry by the tissues of the mother or fetus (or of both) for some mineral constituent lacking in the feto-maternal economy. The dirt-eating of children has probably another origin, and a fatal case of earth-eating was published in this JOURNAL in 1884 (vol. i, p. 994). If some of the correspondents to *Notes and Queries* can lay their hands on the *Index-Catalogue of the Library of the Surgeon-General's Office of the U. S. Army*, they will find there under "Appetite, abnormal," a number of references to articles in medical journals bearing on the subject of geophagy as a disease.

[1] *Notes and Queries*. Eleventh series, vol. vi, pp. 290, 351, 397, 514, 1912.

APPLIED SCIENCE IN MEDICINE.

AT the first meeting for this year of the Académie de Médecine in Paris, the retiring president, M. Gariel, Professor of Medical Physics in the Faculty of Medicine, inducted his successor, the veteran Professor Chauveau, who gave a short address, which, though slight in texture, yet touched on a subject of far-reaching importance. He said that he and his predecessor both belonged to the category of workers engaged in the discovery and codification of the laws which govern the phenomena of life, and it was, he said, proper that the presidential sceptre should pass next year into the hands of the newly elected Vice-President, M. Perier, Surgeon to the Paris Hospitals, who was one of those charged with the duty of preventing or combating disease by the practical application of the laws made and codified in the laboratory and the study. M. Chauveau pointed out that when an occasion arose to apply the discoveries of pure science to practical medicine, it was important always to recognize the position which medicine should take and the share that it should have in the interpretation of results. As an example he quoted the application of the Roentgen rays in diagnosis and treatment. There had been, he said, a controversy between the faculties of science and medicine in Paris as to which should give instruction in this subject. He had been reproached by some scientists *pur sang* for siding with the faculty of medicine. "How is it," he was asked, "that you are siding with the doctors and opposing science?" His answer may be taken to heart in this country also. "I side with the doctors," he said, "in order that I may be on the side of science; with reference to the constitution, the mechanism and the functions of the tissues of the organism, whether normal or pathological, they alone possess the scientific ideas which are the indispensable guides of the observer who would interpret the organic troubles which examinations with the *x* rays are capable of revealing." It is, as M. Chauveau went on to say, curious to find this prejudice expressed at the present day. There was a time when practitioners of medicine were almost the only serious students of biology. Medicine did not at first share fully in the growth of the application of the experimental method which took place during the final third of the nineteenth century; pathology remained almost exclusively observational, and even in physiology the experimental method was comparatively little applied. With the rapid application of experiment to the study of physiology, and with the extraordinary impetus given to pathology by the development of bacteriology, the conditions changed. But a new danger arose—the divorce of medicine from the sciences which it had caused to spring into life. It was seen some years ago in the attitude of the professed physiologist, and in the academic manner of teaching the elements of the subject to medical students. It is still to be detected among laboratory workers, but it is being steadily modified through the influence of many of the leaders among the physiologists and biologists, especially, we would venture to think, in this country, where so much physiological and pathological work of the highest kind is being done.

AN UNFORTUNATE OBSTETRIC METAPHOR.

IT will be remembered that shortly after King Henry VII came to the throne of England he had no small trouble with the pretenders, Lambert Simnel and Perkin Warbeck, who were doubtless favoured greatly by the Lady Margaret of Flanders, widow of Charles the Bold of Burgundy and sister of the late Edward IV. "The Lady

Margaret," wrote Lord Bacon,[1] "was called by the king's friends Juno, because she was to him as Juno was to Aeneas, stirring both heaven and hell to do him mischief." In 1492 the Perkin Warbeck conspiracy was beginning to look serious, and, although the Treaty of Etaples closed France against the lad, who was, to quote Bacon again, "a finer counterfeit stone than Lambert Simnel, better done and worn upon greater hands," it did not prevent him being received at the Court of Margaret; that lady, indeed, openly acknowledged him as her nephew, and gave out that he was Richard, Duke of York. Henry was well aware of the danger he was running, and, having discovered the true name and origin of Warbeck, he sent ambassadors to the Archduke Philip's Council in Flanders to try to persuade that body to bring pressure to bear on the Lady Margaret and have the pretender expelled. The ambassadors were Sir Edward Poynings and Dr. William Warham (afterwards Archbishop of Canterbury),[2] and the latter is said to have made a "remarkably telling speech." The remonstrance, however, was fruitless; and after reading Dr. Warham's remarks, as preserved for us by Lord Bacon, this result is not altogether surprising. Alluding to the countenance given by Margaret of Flanders to the two pretenders, he said: "To speak plainly to your lordships, it is the strangest thing in the world, that the Lady Margaret—excuse us if we name her—whose malice to the king is both causeless and endless, should now when she is old, at the time when other women give over childbearing, bring forth two such monsters; being not the births of nine or ten months, but of many years; and whereas other natural mothers bring forth children weak and not able to help themselves, she bringeth forth tall striplings, able soon after their coming into the world to bid battle to mighty kings." There can be little doubt that this laboured metaphor and coarse witticism produced an effect upon the Archduke's Council not very dissimilar from that which Philip of France's obstetric gibe about corpulence had upon William the Conqueror; at any rate the Council replied that the duchess dowager (Margaret) was absolute in the lands of her dowry, and Perkin Warbeck continued to trouble the throne of England for some years longer.

THE UNIVERSITY OF CALIFORNIA.

THE University of California has its principal seat at Berkeley, on the east coast of San Francisco Bay, about nine miles from the city. Hitherto the teaching in the Medical Faculty has been divided between Berkeley and San Francisco—anatomy, pathology, and bacteriology being taught in the former place. Rather more than a year ago the committee on medical instruction recommended that the departments of the medical school at Berkeley and San Francisco should be brought together in the latter city, that the clinical years should be put upon an academic basis, and that a teaching hospital and a laboratory should be provided, so that the medical school could attain the highest standard. Last April the Medical Faculty decided that clinical instruction should be carried out in three main departments: First, gynaecology and obstetrics, which was to be put upon an academic basis at once, with full salaries for a professor and an assistant. Secondly, medicine, including pediatrics, neurology, and dermatology; this department[3] cannot as yet be put upon a full academic basis, but a sum of about £600 has been set aside for the payment of assistants for the current year. The third main department will be surgery, including orthopaedics, urology, ophthalmology, rhinology, otology, and laryngology; the money available being insufficient to put the department on a full academic basis, a sum of about £350 has been set aside to pay three assistants. The work of the hospital pathologist was reorganized, and an additional assistant professor of pathology at a salary of £500 a year appointed. A sum of about £250 was assigned for work in radiography. The proposals to provide a new university hospital have gone so far that plans have been prepared for four units of forty to fifty beds each for surgery, medicine, diseases of women, and diseases of children respectively. About £70,000 has already been given by private individuals to build and equip the departments of medicine and children's diseases. Meanwhile, alterations will be made in the existing hospital to accommodate the clinics, and clinical and pathological laboratories will be equipped.

[1] Bacon, Francis. *History of King Henry VII*, 1622.
[2] *Dict. of Nat. Biography*, lix, p. 378.
[3] *Science*, January 3rd, 1913.

COLLOIDAL COPPER IN THE TREATMENT OF CANCER.

DRS. LOEB, MCCLURG, AND SWEEK contribute to an American journal[1] a report based on the recent work of Wassermann on the effects of intravenous injections of selenium and eosin on mice. They claim good results from the injection of a colloidal solution of copper in cases of ulcerated cancer in man. They first tested the effect of various copper preparations on mouse carcinoma, and then applied the method to man, using a colloidal solution of copper prepared according to Bredig's method. Each patient received daily an intravenous injection of from 300 to 400 c.cm. of the solution warmed to about the normal temperature of the blood and introduced slowly into the vein. Usually injections were given every week, and were always followed by a temporary rise of temperature. The tumour became hyperaemic and sensitive in a few hours, and the discharge from any ulcerated part increased, but after about fifteen injections both these symptoms disappeared and distinct retrogression of the tumour became noticeable. This retrogression seemed continuous. Eight cases in which carcinoma had developed in different parts of the body are reported. The authors of the paper urge that their treatment seems effective in causing the retrogression of various kinds of cancer which have till now withstood other modes of treatment. They admit that a definite judgement on the ultimate outcome must be suspended. Like other observers, they point out that mouse cancer is an extremely malignant disease, and if controllable by agents introduced into the blood carriers, as seems to be the case, it may be hoped that carcinoma in man may be yet more effectively controlled by similar means.

[1] *Interstate Medical Journal*, St. Louis, Missouri, December, 1912.

AUSTRALASIAN MEDICAL CONGRESS IN NEW ZEALAND.

AT the annual general meeting of the British Medical Association at Liverpool Dr. Barrett of Melbourne, addressing the members present, gave a cordial invitation to them to attend the tenth session of the Australasian Medical Congress which is to be held at Auckland, New Zealand, on February 9th to 14th, 1914. A letter has now been received from Dr. Bernard J. Dudley, of Auckland, honorary secretary, written on behalf of the Executive Committee of the Congress, confirming the invitation. It is expected that many representatives from all parts of Australia will be present, and they would be delighted to welcome colleagues from Great Britain. A large Dominion Exhibition, which will give visitors exceptional opportunities of viewing the resources of New Zealand, will be open in Auckland at that time. After the congress facilities will be afforded to visit some of the famous thermal wonders and scenic beauties of the Dominion. It is expected that special favourable arrangements will be made with the various shipping companies for members who may be able to visit New Zealand on this occasion.

AT the instance of the President-elect, the Council, at its meeting on Wednesday, decided to add to the Sections to be held at the Annual Meeting of the British Medical Association at Brighton next July a Section of Balneology and Climatology.

"APPENDICITIS—a Plea for Immediate Operation" is the title of a paper Mr. Edmund Owen will read at the Medical Society of London on Monday evening, February 10th. Among those who have expressed their desire to take part in the discussion which will follow are Mr. W. H. Battle, Sir George Beatson, Mr. C. P. Childe, Mr. Connell (Sheffield), and Mr. Grey Turner (Newcastle-on-Tyne). The secretaries will be pleased to receive the names of others desirous of taking part in the discussion.

THE Royal Statistical Society has appointed a committee, with Dr. Reginald Dudfield as chairman, to report on the available statistics of morbidity and mortality in the United Kingdom. It is believed that many valuable collections made by hospitals and institutions may be unknown to the society, and the chairman appeals to the authorities of such institutions to communicate any collected data, published or otherwise. The information may be addressed to him at the Royal Statistical Society, 9, Adelphi Terrace, Strand, London, W.C.

DR. J. W. W. STEPHENS, Walter Myers Lecturer in Tropical Medicine in the School of Tropical Medicine in the University of Liverpool, has been appointed to the Sir Alfred Jones chair of tropical medicine in succession to Sir Ronald Ross. Dr. Stephens, who has been associated in the teaching work of the school for ten years, graduated M.D. of the University of Cambridge in 1898, and at one time held the John Lucas Walker studentship of pathology of that university. In 1897 he was appointed assistant bacteriologist to the Government of India, and was subsequently a member of the Royal Society's Malaria Commission in Africa and India.

Medical Notes in Parliament.

Workmen's Compensation Act Regulations.—Mr. Steel-Maitland asked the Home Secretary, on January 22nd, with regard to the fact that in cases of appeal under Section 8 of the Workmen's Compensation Act, 1906, the present Regulations did not state whether the worker possessed a right to have his medical attendant present at the examination by the medical referee, whether he was notified of the right; and whether such modifications could be made in the Regulations as to establish such a right and to provide for the worker being notified of its existence.—Mr. McKenna said that the Regulations gave both workman and employer the right to make any oral statements, or to submit any written statements, to the referee; and this included a written statement by the workman's or employer's doctor, but they did not give either party the right to have his doctor present at the examination. The question of giving such a right was carefully considered when the Regulations were framed in 1907, and it was decided that it would be undesirable to do so. He was not aware of any sufficient ground for making a change in the Regulations on this point. He added that it was open to the referee, if he thought it desirable, to allow the doctors to be present and to question them, and that was, he believed, sometimes done.

Lead Poisoning.—Mr. Steel-Maitland questioned the Home Secretary, on January 22nd, with reference to a case in which a girl had been certified by four doctors to be suffering from lead poisoning, but the medical referee on appeal pronounced against her claim.—Mr. McKenna said that the case had been brought to his notice in November last, when it was stated that the girl and her mother complained that the referee had made only a perfunctory examination. The medical referee had stated that he had very carefully examined the girl, and his detailed report on the case corroborated that statement. The medical referees were men of high standing in their profession and very carefully selected, and he did not think that there was any negligence on the part of the referee in the case referred to in carrying out his duties.

Calf Vaccine Lymph.—In reply to Mr. Sutton, the President of the Local Government Board, on January 22nd, said that all calves which were used for the production of lymph were slaughtered and then examined by the Board's veterinary surgeon, and the lymph from any animals not certified to be healthy was destroyed. The carcasses of the animals were also subject to veterinary inspection by the officers of the Corporation of the City of London, and dealt with in accordance with its strict regulations. Any carcasses which were certified as unfit for human consumption were destroyed.

Scottish Universities.—In reply to Mr. Pirie and Sir Henry Craik, the Financial Secretary to the Treasury said that he hoped to lay the correspondence between the Treasury and the Scottish Universities upon the table during the week. The Treasury had made the stipulation that payment in full of the additional grants would be made only on the institution of inclusive fees in all four Scottish universities, and on the footing that all fees should be uniform. The correspondence would show the present position with regard to the institution of such inclusive fees by the universities.

East Africa Protectorate.—In reply to Mr. Crawshay-Williams, the Secretary of State for the Colonies stated, on January 15th, that the question of the sanitation, not only of Nairobi but of the East Africa Protectorate generally, had been recently before him, and he was considering, in consultation with the Governor and his expert advisers, the best method of improving the present state of affairs.

Board of Trade Medical Staff.—Mr. Peto asked the President of the Board of Trade, on January 27th, whether the present medical staff of the Board of Trade was so inadequate that its duties were almost wholly confined to the inspection of emigrants travelling on emigrant-carrying ships; and, if so, what action he proposed to take in the matter.—Mr. Buxton said that the medical officers of the Board of Trade were appointed to perform certain specific duties under the Merchant Shipping Acts, including the inspection of emigrants. He had no reason to think that the staff was inadequate to perform those particular duties.

Colour Blindness.—Mr. Cathcart Wason asked the President of the Board of Trade, on January 27th, if he was assured that the classification of colour blindness by the Departmental Committee of the Board of Trade was satisfactory, or if he proposed to take any steps to modify it.—Mr. Buxton replied that, as at present advised, he did not propose to take any steps to modify the method of classification of colour-blind persons adopted by the Departmental Committee, which was only one of several methods used by the appeal examiners. The Committee recognized in its report that the method had had only a short trial, and expressed the opinion that the final decision as to whether, in a given case, colour deficiency was so great as to involve incompetency ought to remain with the appeal examiners.

Highlands and Islands Committee.—The Prime Minister on January 23rd, said he could not say approximately at what time the Government's intention with regard to the report of the Highlands and Islands Committee would be stated; and in reply to a further inquiry by Mr. Cathcart Wason (Orkney and Shetland), on January 27th, Mr. Masterman would not go further than say that he hoped to make a statement shortly. An attempt to extract information by a question addressed to the Prime Minister, on January 28th, as to the supplementary estimates, also failed to elicit any definite reply.

Mental Deficiency Bill.—In reply to Mr. Alan Sykes, the Prime Minister renewed his promise that the Mental Deficiency Bill should be introduced early next session.

Scotland.

[FROM OUR SPECIAL CORRESPONDENTS.]

THE CHAIR OF BACTERIOLOGY IN EDINBURGH.

EDINBURGH University has waited long and patiently for its professor of bacteriology. He is in sight at last—at least his chair is. A White Paper issued on January 21st contained an ordinance of the Court of the University providing for a professorship to be called the "Robert Irvine Chair of Bacteriology"; the professor is to belong to the Faculties of Medicine and Science, and his salary is to be the annual free income of the £25,000 which constitutes the Robert Irvine endowment. The late Mr. Robert Irvine, of Royston, Granton, near Edinburgh, left estate to accumulate till it reached the sum of £25,000 or £30,000, for the purpose of founding this professorship and of furnishing the equipment of a class-room and laboratory. The money is now available. Mr. Irvine was a Fellow of the Chemical Society and of the Royal Society of Edinburgh, and contributed in collaboration with Sir John Murray papers to the latter society on blue muds on the floor of the ocean, and on manganese oxides and manganese nodules in marine deposits; to him also the same society awarded the Neill Prize in 1895 for his papers on the action of organisms in the secretion of carbonate of lime and silica, and on the solution of these substances in organic juices. Local medical opinion has already settled who the first occupant of the Robert Irvine Chair of Bacteriology is to be.

TWO MEDICAL PROBLEMS.

Emeritus Professor Crum Brown presided over the annual meeting of the Edinburgh Medical Missionary Society at the Edinburgh Café on January 23rd. The ordinary business was transacted and the financial statement made, and thereafter Dr. Prentice of Livingstonia and Dr. D. D. Muir of Manchuria, both of them former students of the society, gave addresses. In each address a pressing medico-political problem was alluded to. Dr. Prentice spoke of South Africa as the land of insect-borne diseases, and gave a graphic account, not unmixed with dry humour, of the numerous ticks and their insinuating ways; but he spoke more gravely of *Glossina palpalis* and *morsitans* in their relation to sleeping sickness and the protection of the wild game. He expressed his conviction that the antelope served as reservoirs for trypanosome infection. Dr. Muir gave his experience of the attempts being made in Manchuria to stamp out opium-smoking. Whereas some years ago medical missions had to deal with numbers of cases of suicide due to the drug; when he left China they were scarcely meeting with one. The Chinese police, he said, were in earnest about tracking down the vendors of the opium. The last case of attempted suicide from opium which he had seen before leaving Mukden had been brought into the hospital by two Chinese policemen; and the two representatives of the law managed by clever and persistent cross-questioning to find out from the man (not, perhaps, in the clearest state of mind to defy their inquisition) from whom he had bought the drug. Three years ago it was common in travelling through the land to see many fields with crops of the opium poppy and to witness the women going up and down making incisions and collecting the juice; when he left none of these things were to be seen. Dr. Muir also spoke of the 142 Chinese candidates who appeared for the preliminary examination in medicine at the Mukden Medical College, and of the dismay of the examiners, whose duty it was to read the more than seven hundred examination papers (in Chinese) which resulted therefrom. About fifty students had passed, and were doing well at the college.

MEDICAL SERVICE IN THE HIGHLANDS.

The Committee of Management of the Highlands and Islands Approved Society have sent to Mr. Lloyd George a memorial with reference to medical service in the Highlands. It is pointed out that the memorialists represent a society which was formed as the outcome of appeals made by the Scottish Commissioners to the Supreme Courts of the Presbyterian Churches in Scotland, asking their assistance in administering the Insurance Act in the poorer and remote parts of the Highlands. After conference among representatives of the churches, drawn from their Highland Committees, it was deemed best to form an approved society. The memorialisis, as honorary members, are managing the society until the first annual meeting, and express their satisfaction with the report of the Committee of Inquiry on Medical Service in the Highlands and Islands. They hail the proposals of the report as an earnest of sorely-needed reform, and point out that the large contribution which the Highlander makes to the personnel of the Empire demands medical care not merely for men and women of insurable age, but also for school children and infants. Local resources are admitted to be inadequate. The economic conditions of certain portions of the Highland area call for generous treatment by the Treasury, which treatment should include special consideration of educational questions, and particularly of medical inspection and treatment of school children. The memorialists express the hope that the recommendations of the report will be ungrudgingly endorsed by the Treasury and at once adopted by Parliament.

At a meeting of the Executive Committee of the Queen Victoria's Jubilee Institute for Nurses, held at the central office, Edinburgh, the following resolution was adopted:

> That in view of the terms of the report of the Highlands and Islands Medical Service Committee and of the expression of approval of the work done by Queen's nurses in the Highlands and Islands, following on similar expressions in the reports of the Departmental Committee of the Local Government Board for Scotland (1904), and of the Royal Commission on the Poor Laws and Relief of Distress (1909), the Executive Committee of the Scottish Branch of Queen Victoria's Jubilee Institute for Nurses urges that the claims of these nurses may be recognized in the allocation of any Government grant towards the support of medical service in the Highlands; that copies of the above resolution be forwarded to the Chancellor of the Exchequer, the Secretary for Scotland, and to the Chairman of the National Health Insurance Commission for Scotland.

JOINT SANATORIUM FOR FORFARSHIRE.

At a conference held on January 24th in Dundee to discuss the question of co-operating in regard to the provision of one large sanatorium suitable for the needs of the county of Forfar, the Dundee Public Health Committee, the county council, and all the burghs throughout Forfarshire were represented. The convener of the Dundee Health Committee, who presided, said that they believed it would be to the advantage of the county to co-operate with Dundee in a large scheme in which cheaper management was possible. Dundee would be responsible for the building and management of the sanatorium, and the county council would be required to guarantee a certain number of beds. The arrangement would be for sanatorium treatment only, for the advanced cases the outside districts would have to make their own provision. During the discussion which ensued, Dr. Templeman (Dundee) pointed out in reply to a question, that it was impossible to give the cost per patient to be charged by Dundee, as the capital expenditure that might be involved was not yet known. The Lord Provost said that negotiations had been opened with the directors of the Royal Infirmary for the purchase of the Sidlaw Sanatorium at Auchterhouse; it would be the most suitable and probably the least expensive. The feeling of the meeting was that it was expedient to co-operate with Dundee.

THE LATE DR. GEORGE A. GIBSON.

At the weekly meeting of the managers of the Edinburgh Royal Infirmary, on Monday, January 27th, Sir James Affleck moved the adoption of a minute recording their deep regret at the death of Dr. George Alexander Gibson, senior ordinary physician to the Royal Infirmary. The minute recalled the fact that it was through Dr. Gibson's instrumentality that a considerable sum of money was given by an anonymous donor to establish and equip a clinical laboratory within the infirmary in which various modern scientific appliances could be utilized for the more accurate investigation of disease. The minute was approved.

Ireland.

[FROM OUR SPECIAL CORRESPONDENTS.]

Royal College of Surgeons.

The Charter Day dinner of the Royal College of Surgeons in Ireland will take place on Saturday, February 1st, at 8 p.m. A meeting of the College will be held immediately before the dinner for the purpose of conferring the Honorary Fellowship on Surgeon-General Sir Launcelot Gubbins, K.C.B., Director-General Army Medical Service, and Sir Berkeley Moynihan, F.R.C.S. The Lord Lieutenant has accepted the invitation of the President and Fellows to be present at the dinner.

Research Defence Society.

At the fourth annual general meeting of the Dublin branch of the Research Defence Society, held in the Theatre of the Royal Dublin Society, Dr. Sims Woodhead, Professor of Pathology in the University of Cambridge, delivered a lecture entitled "Experimental Research and its Bearings on Modern Medicine." At the outset he spoke of the necessity there was for making it perfectly clear that experiments on living animals were carried out only under a full sense of what those who were making the experiments owed to their subjects. Between the time of Galen and Harvey knowledge of the conditions under which the blood circulated through the body had made little or no advance, in spite of the fact that anatomists had begun to make dissections of the human body. The whole history of inflammation, of specific infectious diseases of various types, of the action of drugs, of the healing of tissues, of protective inoculations, of localization of function of the brain and spinal cord, of improved methods of diagnosis, had been modified, in fact, had been dependent upon those basal observations and researches made by Harvey and Bell. The real friend of both animals and man was he who, in his search for means of alleviating pain, was not cowardly enough to run away from the clear duty of using every legitimate means of gaining knowledge.

Infant Mortality in Dublin.

The Dean of St. Patrick's preached recently in the cathedral on infantile mortality in Dublin. He dwelt on two facts. The first was that in Dublin hundreds of infants died every year from preventable causes. The second was that the Dublin Corporation had taken definite action towards saving the lives of the children. He described the work that is being done in Dublin by the committee of voluntary helpers who are trying to save the lives of young children by giving them a chance to survive the dangers of unprotected infancy. The first duty was the education of the poor regarding the rearing of children; no money was given to the mothers by the visitors, but all health visitors had books of dinner tickets, which they distributed in necessitous cases. The importance of breast feeding was urged on the mothers, and free pure milk was supplied to those who were unable to nurse their infants. The dean pointed out that these health visitors, numbering over a hundred, were nearly all working women, shopkeepers, shop assistants. and working girls, who, after their hard day's work, gave their leisure, short though it were, to save children's lives. They had to attend lectures and pass an examination before they were allowed to undertake the work. He concluded by an earnest appeal for funds in order to assist in the continuance of the work.

England and Wales.

[FROM OUR SPECIAL CORRESPONDENTS.]

LONDON.

Staffs of Institutions and Medical Benefit.

The Finance Committee of the Metropolitan Asylums Board on January 25th reported as to the arrangements to be made for medical benefit of the insured members of the staff, comprising some 1,800 persons, of whom 1,750 were women, practically all being entitled to residential emoluments. In the case of the non-resident staff, the Committee said there was no reason why they should not proceed as ordinary insured persons, selecting their medical attendant from the panel or otherwise conforming with the regulations. The case of the resident insured staff, however, was different. Under the regulations any or all of the medical men on the local panel might be chosen by different individuals of the resident staff of any institution. This could hardly fail to give rise to difficulties, even if the managers were willing to allow outside doctors free access to their institutions. The medical superintendents of the Board's London hospitals were unanimous as to the impracticability of such a position. The Board's medical officers were required to attend sick members of the resident staff, although the staff could not demand treatment as a right. In view of the serious considerations of administration and discipline, and the questions of medical responsibility involved, informal inquiries were made of the Insurance Commissioners who advised that the Board should communicate with the Insurance Committees for the areas concerned with a view to their allowing the resident insured staff collectively, in lieu of receiving medical benefit under arrangements made by the Committees, to take their medical benefit direct from the Board. The Board would guarantee treatment, medicines, etc., practically on the lines voluntarily followed heretofore, some modifications in the matter of records being made, and the Board would be entitled to claim from the Insurance Committees in respect of this service. While individual employees were under no obligation to accept this proposal, the Committee expressed the hope that they would all do so.

Local Objections to a Tuberculosis Sanatorium.

The arrangements are now almost completed for the reception at the Downs School, Sutton, Surrey, of tuberculous persons entitled to sanatorium benefit. The nature of the agreement entered into by the Metropolitan Asylums Board with the London County Council have already been reported, but objection was raised by a deputation from the Sutton Urban Council to the Metropolitan Asylums Board on January 25th. Dr. G. H. J. Hooper, who was the spokesman of the deputation, said that to the south of the Downs school there was some small property, and immediately opposite an elementary school. On the north side was a large eligible building property. The people interested in the development of this property and those living in the vicinity were horrified at the idea that these poor patients should be treated at the school. Near the building was a farm from which a large number of residents were supplied with milk. He did not regard a building intended for the accommodation of 600 girls as suitable for a sanatorium for 300 patients. The consumptives could not be kept within the four walls of the Downs estate; they must have exercise, and would be found walking over the downs and in the streets of Sutton. That involved a danger to the inhabitants; it might be replied that the patients would be supplied with the necessary utensils, but would they use them? The inhabitants knew they could not object to having institutions built in their midst, but there were questions of risk and also of sentiment involved. He did not think the Downs school, from its exposed situation, was suitable for a sanatorium, and that a more suitable place could be found without injuring a prosperous residential town. Sir Edward White, a member of the Board, pointed out that the Brompton Hospital was in the midst of a purely residential neighbourhood, and that the patients could be seen from the road taking exercise in the grounds. Dr. Hooper replied that patients were only kept at Brompton Hospital until they could be sent to a more suitable place. The Chairman (Mr. W. Dennis) said, in reply, that it would not be fair that the deputation should go away under the impression that the arrangements to which it objected could be completely abandoned, after having received the approval of all the authorities and Government departments concerned. These arrangements would only obtain until March, 1914, though he could not promise that they would not be extended. Neither could he say whether it would be possible to keep the patients within the boundaries of the institution. He could assure the deputation that in arriving at its conclusion the Board had had advice which it thought thoroughly reliable and good. No discussion took place after the deputation had withdrawn.

The Board approved the arrangements suggested.

PROPOSED MIDWIFERY SCHOOL IN WORKHOUSE WARDS.

The Wandsworth Board of Guardians, at their meeting on January 23rd, adopted a scheme embodying the establishment of a training school in midwifery for nurses at the lying-in wards at the workhouse. It is proposed, with the sanction of the Local Government Board, that eight senior probationers shall be allowed to enter on a fourth year of training, during six months of which they shall be taught midwifery, the remainder of the time being spent in the ordinary wards. They are to be paid £18 a year. No charge is to be made for the special training, but the probationers are to sign an undertaking to remain for the whole of the fourth year in the guardians' service. Dr. A. E. Dodson, the medical superintendent at St. James's Infirmary, is to undertake the teaching. The guardians, in agreeing to the proposal, decided to ask the Central Midwives Board to recognize the lying-in wards at the workhouse as a training school.

Correspondence.

THE *POST-MORTEM* EXAMINATION OF NAPOLEON.

SIR,—No one is more inclined to accept everything that Dr. Arnold Chaplin writes concerning the fatal illness of Napoleon as authoritative than myself; and yet his letter in your last issue, where he cites Surgeon Rutledge against our mutual friend, the pathologist Antommarchi, confirms me in my belief that the evidence produced in my Hunterian Lecture is convincing proof of the authenticity of the Napoleonic specimens which are now in the museum of the Royal College of Surgeons. The chief point which my opponents have to meet is: How was it possible for O'Meara to hand to Astley Cooper specimens which tally exactly with morbid appearances incidentally described by Antommarchi in his *post-mortem* report? They are specimens which could be obtained only from a case of chronic infection such as we have good reason for supposing Napoleon to have been the subject. Dr. Chaplin has overlooked that part of my evidence and addressed himself to the strictness of the watch over Napoleon's body. Surgeon Rutledge had a vigil by the corpse and the vessels containing the heart and stomach of over twenty-four hours; during that time Antommarchi stole Napoleon's mask, and, we may suppose, could, from his experience in Florence, have easily invented a manœuvre to obtain anything else he desired.

I know that Dr. Chaplin agrees with me in regarding Antommarchi's account of the *post-mortem* appearances as by far the most complete and reliable document we now have; without it we should know nothing of Napoleon's disease, except that there was cancer of the stomach. Surgeon Rutledge's statement that he cut the liver out is in contradiction to every other account available to me, and no one knows better than Dr. Chaplin that every attempt to discredit Antommarchi's statements would receive the most ready encouragement from the Lowe party, to whom he owes Rutledge's statement. Antommarchi's account of the condition of the liver must stand; the clinical symptoms of Napoleon's case leave not a shadow of doubt that at one period there was an inflammatory disturbance of the diaphragm and of the liver.

There is also another aspect of Napoleon's case to which Dr. Chaplin has not done justice—the evidence that Napoleon's illness was of the nature of a recurrent fever accompanied by enlargement of the lymphoid tissues, and the fact that the specimens in the museum of the College of Surgeons show an enlargement or hyperplasia of a part of this system.

As I corrected the proofs of the above part of this letter I received a communication from Sir Alexander Russell Simpson which throws a welcome light on the manner in which the watch was kept over Napoleon's remains. Many must have come across the tradition that the rats of Longwood attacked the heart, which was preserved in a separate vessel. My friend, Mr. Mackellar, first told me of this tradition; I have also come across it in newspapers, but have hitherto failed to trace the account to any reliable source. Sir Alexander Simpson has kindly allowed me to make the following extract from his letter:

When my uncle, Sir James Simpson, came back from a professional visit in Berwickshire, where he had met Dr. Arnott, he was full of what Arnott had been telling him of his time in St. Helena. What specially impressed him was that Dr. Arnott had charge of the heart and other things that had been removed at the autopsy for the following night. Afraid that some of the Napoleonic retainers might come in and carry off the vessel in which they had been put at the time of the dissection, he emptied them into his wash-hand basin, covered them up with water, and lay down to sleep with loaded pistols under his pillow. He slept lightly. Hearing a splashing sound he jumped up, expecting to see Bertrand or some one at the preparations, and found that it was only rats trying to get at the flesh. "*Fancy rats trying to make away with Napoleon's heart!*" said Sir James, in repeating the story.

This account corroborates Antommarchi's statement that Arnott was the officer on watch. Probably he relieved Rutledge. In my lecture I stated that these two men kept alternate watch; the point I wish to emphasize is that Arnott was predisposed towards Antommarchi.

I should like to take this opportunity of thanking—not only Dr. Chaplin, but the other correspondents who have sent me valuable information—Mr. Cyril H. Howkins and Major F. S. Irvine. I wonder if any of your readers could help me in tracing those two parts of the mould of Napoleon's bust taken by Dr. Burton, who was a cousin of Graves, the famous physician of Dublin. The missing parts are: (1) The mould giving the impress of the back of the head and neck; (2) the front of the neck. They were, according to Graves, in the possession of Dr. Burton and may still be preserved by some of his descendants who have not realized their value. If they were recovered, an accurate cast of the head of the great Emperor could be obtained.—I am, etc.,

London, W.C., Jan. 27th. A. KEITH.

RESEARCH DEFENCE SOCIETY.

SIR,—It is said that the fifth year in the life of any society is the critical period of its fortunes. The Research Defence Society was founded on January 27th, 1908. To all who are interested—and who is not?—in medical research, we beg you to let us say that the Society has its hands full of work, and only wants more money to do more work. Much has already been done, by lectures and by distribution of literature, to bring home to people the truth about experiments on animals in this country, and the great value of them, not only to mankind, but also to the animal world. The expenses of our society are heavy, but the good results of our work are extended far and wide. We have lately opened a bureau and exhibition at 171, Piccadilly (opposite Burlington House). We are exhibiting pictures, portraits, charts, anaesthetics and inhalers, germs in pure culture, tsetse flies and mosquitos, and so forth. This little exhibition, every day and all day long, displays to "the man in the street" the facts of the case. We are the only society which is doing work of this kind; but, of course, it cannot be done without money. Our record for the last four years gives us the right to hope for a great increase of our membership, and of our funds, in the coming year.—We are, etc.,

DAVID GILL,
President.
F. M. SANDWITH,
Honorary Treasurer.
STEPHEN PAGET,
Honorary Secretary.

21, Ladbroke Square, W., Jan. 24th.

ANTIVIVISECTION IN GLASGOW.

SIR,—Dr. Hadwen repeats the statement, "Not one word about alcohol drinking or vaccination escaped my lips *the whole evening*" (the italics are mine). He then professes to quote what he now says he did say upon these subjects, with the reservation that they were said during the discussion, and not during the lecture. Dr. Charles Bennett, one of the gentlemen whose names I quoted in my last letter, was not present at the discussion, but left before the end of the lecture. He remembers, as do the rest of us, that Dr. Hadwen spoke at length on these subjects. My object in writing was to show that many of Dr. Hadwen's statements to you were incorrect. Besides

my own evidence as to this, I have been able to bring several reputable witnesses with regard to a positive matter of fact; and with regard to two other matters of fact, I sent you a copy of the report in the *Glasgow Herald* in order to verify my statements with regard to them, and to prove the inaccuracy of Dr. Hadwen's. As all the cards I care to play are on the table, I can do no more than leave you and your readers to judge as to who is accurate.—I am, etc.,

Glasgow, Jan. 25th. CHARLES WALKER.

THE TREATMENT OF CANCER.

SIR,—Under this title you published a review on p. 121 of your issue of January 18th. Kindly allow me space in your pages to note one or two points in the review, and to correct one or two errors. You say that I "first invited a general trial" of the pancreatic enzymes without myself being "very clear as to how it (the method) should be applied." I never "invited" any trial at all. On your invitation I published in the JOURNAL (January 20th, 1906) a brief account of some preliminary experiments upon cancerous mice. That sufficed. At once, from all parts of Europe and America, but not from Great Britain, I was overwhelmed by requests from medical men either for preparations of ferments or for addresses where such could be obtained, or for general directions for the use of such preparations in cancer. To these I responded because I wished to help my fellow-men. How could I, or any one else, then, seven years ago, know how such preparations should be used to obtain the best results? Like Lord Lister's method of antiseptic surgery, or tuberculin, or salvarsan, much had to be learnt from actual experience of the method; and, moreover, the manufacturing chemists had to find out how to put up active, strong, and keeping injections of the ferments. In 1879 I often saw Professor Edward Lund and Mr. Sam Bradley perform major operations under Listerian methods as they then were. But if either of those departed surgeons could now witness a major operation, undoubtedly he would recognize little or nothing of the Listerian methods they employed. None the less, you would not venture to suggest that Lord Lister should have waited until his methods were made perfect before giving them to the world. Even his first attempts at antiseptic surgery yielded *some* instances of success; in the same way the very first preparations of trypsin and amylopsin made "for Dr. Beard," as the makers put it, in 1906 furnished a very few cures. I am hardly responsible for damage done by *inert* preparations.

The preparations of pancreatic ferments, to which I was obliged to refer medical men in 1906, for instance, had only *one-twentieth part of the potencies* of those I should name to-day, and the latter are put out by the same firm of specialists. Therefore, if Dr. Baetzner, who has just published a paper upon the treatment of surgical tuberculosis by means of trypsin,[1] had had to employ the trypsin of 1906, he would scarcely have got the brilliant results he has recorded. Moreover, any one using such a weak trypsin, or some of the useless, even inert, injections still on sale, would, if endeavouring to test Baetzner's finds, conclude, as so many have done after using weak or inert ferments in cancer, that the method was worthless and the author not what he will turn out to be, a very great surgeon. You refer to an "army officer," now in Burma, who cured 3 out of 4 cases of cancer treated by him. If my account of the treatment be puzzling, in his own words his own procedure is recorded in the book reviewed. But, although the book was published nearly fifteen months ago, and although preparations of pancreatic ferments, which appear to fulfil every scientific requirement, that is, the ones Dr. Baetzner employed, have been on sale in London since April, 1912, at this moment I do not know of a single case of cancer in this or any other country which has had a full course of treatment on the lines laid down by this army officer, with such powerful preparations, and in the doses he employs. Indeed, one might imagine cancer had ceased to be the curse of the human race, but for such facts as that only a day or two ago in the weekly summary of deaths it was stated that last week there were eleven deaths from malignant disease in this city. Probably it would not be too much to assert, that not one of these cases was treated with pancreatic ferments after my methods.

In examining any scientific find, or supposed find, experimentally, nothing is easier than to get a negative result, especially if inert reagents be employed. But in the chemical experiment the observer must satisfy himself as to the true nature of his reagents, and, as the late Professor D. J. Cunningham once remarked to me, "Negative results never prove anything in science." There are many members of the medical profession still living and treating cases of cancer who had declared that the pancreatic ferments were "useless" or "futile" in cancer, and who had in good faith drawn this conclusion after using preparations which were inert, and without even knowing that they were inert. In fact, in the use of inert ferment preparations, in the lack of knowledge of the inert nature of their reagents, and in the erroneous conclusions drawn from such vitiated experiments these medical men agreed with the official researchers.

Any "disappointment" I may feel is in a recognition that mankind would rather die than believe the truth. I have never once spoken, or written, or even thought of "the greatness of his (my) achievement"; on the contrary, I have described the whole thing as merely a side-issue, which it is. Shortly now, for it is in the printer's hands, you will be given an opportunity of reading an account of a small piece of experimental work of mine. This does not deal directly with cancer, and its title is the very simple one, "On the Occurrence of Dextro-rotatory Albumins in Organic Nature." To use a phrase which in a similar connexion has been employed by a distinguished living investigator, in this small paper "*the unchallengeable proof*" is given, not only that dextro-rotatory albumins similar to those of cancer do occur in organic nature, but that they are widely represented. Incidentally, the paper confirms once more my statement, first made some years ago, that the cancer conclusions were merely a side-issue.

Possibly, as you say, "many workers . . . hold that his (my) views are entirely erroneous." If so, they are very careful to avoid pointing this out in places where a reply from me would also be published. Their silent "arguments" and "evidences" cannot be very convincing, otherwise you would scarcely add, that possibly one day these "erroneous" views may turn out to have contained the germ of the final solution of the cancer problem. Again, the successful case of sarcoma you mention is not by any means the only case of cure, and scientifically it is not at all clear why "erroneous" views should lead to successful results. Even one cure is a new fact, and Pasteur held, rightly, that erroneous theories never produced new facts. Pardon me for insisting that we are not dealing with the question of the number of swallows which makes a summer, but with the problem of what is *a crucial scientific test*. "If a doctrine be challenged," said Pasteur, "it happens seldom that its truth or falsity cannot be decided by some crucial test. Even a single experiment will often suffice either to refute or to consolidate the doctrine." An instance of this kind, where *a single scientific experiment* suffices to establish the truth of my doctrines, is the case of the pancreatic ferments, trypsin and amylopsin, *versus* cancer. Finally, permit me to express complete agreement with the following, written by a modern author: "'And,' he added, 'speaking of gratitude, those who lead the way do not expect gratitude. It is enough for them to have led the way.'"—I am, etc.,

Edinburgh, Jan. 22nd. J. BEARD.

[1] *Practitioner*, January, 1913, p. 203.

BOVINE AND HUMAN TUBERCULOSIS.

SIR,—I do not know whether the omission was the printer's fault or mine, but the part of my letter relating to the geographical distribution of tuberculosis should have been in inverted commas. I got the information from Green's *Encyclopaedia and Dictionary of Medicine and Surgery*. I am sorry to say I have forgotten the name of the writer, but he evidently knew what he was talking about. It is a pity Dr. Fisher did not deal with the portion of my letter referring to the condition of affairs as to tuberculosis in Guernsey, where Dr. Bishop tells us that "only ½ per cent. of the cattle are tuberculous, and consequently that cases of bovine tuberculosis in human beings are extremely rare." On the other hand, may I repeat that in 1909, 10,000 children died in England and Wales from

tuberculosis (other than from pulmonary tuberculosis) and that 70 per cent. of our dairy cattle are tuberculous.

These facts alone form a strong argument against the acceptance of the Italian axiom that where there is much tuberculosis in man there is little tuberculosis in animals, and where there is much tuberculosis in animals there is little tuberculosis in man.—I am, etc.,

Beverley, Jan. 20th. T. READMAN.

TO ESPERANTISTS.

SIR,—At a meeting of the Universal Medical Esperanto Association (Tutmonda Esperantista Rinacista Asocio) held in Cracow last August a committee was appointed to organize an Esperanto section, similar to that which was held during the last International Congress at Budapest, in connexion with the forthcoming International Medical Congress. A considerable number of Russians, Poles, Hungarians, and others stated that they would go to London if hopes could be held out of forming such a section. Will any Esperanto medical men or others willing to help kindly communicate with me?—I am, etc.,

G. JAMESON JOHNSTON, F.R.C.S.I.

13, Lower Fitzwilliam Street, Dublin, Jan. 20th.

CERVICAL RIB.

SIR,—On February 14th the meeting of the Clinical Section of the Royal Society of Medicine will be devoted largely to the subject of cervical rib—particularly the results of operative treatment. We should like very much to have: (1) Cases showing the results of the removal of the rib; (2) cases showing neuro-muscular features; (3) cases with vascular features. Gentlemen wishing to show cases will please communicate with the Secretaries, Chas. H. Fagge, M.S., 3, Devonshire Place, W.; W. Essex Wynter, M.D., 27, Wimpole Street, W.—I am, etc.,

Oxford, Jan. 13th. WILLIAM OSLER.

The Services.

INDIAN MEDICAL SERVICE.

THE result of the January examination was announced on January 25th. There were 28 candidates, the first 12 being admitted as lieutenants on probation with effect from January 25th.

The names of the successful candidates with the marks obtained by each out of a possible total of 5,100 are given below, together with their degrees and medical schools:

Name.	Degrees, etc.	Medical School.	Marks.
R. R. M. Porter ...	M.B., Ch.B.Aber., M.A.Aber.	Aberdeen University, Aberdeen Royal Infirmary, and Aberdeen Eye Institute	3,707
R. Sweet	M.B., Ch.B.Glasg.	Glasgow University	3,489
E. Calvert... ...	M.R.C.S., L.R.C.P., B.A.Cantab.	St Bartholomew's Hospital and Cambridge University	3,320
P. J. Walsh ...	M.B., Ch.B., B.A.O.(N.U.I.)	University College, Cork, North Charitable Infirmary, Cork, and Cork District Hospital	3,308
J. R. D. Webb ...	M.R.C.S., L.R.C.P.,	Liverpool University, and University College Hospital	3,301
F. Phelan	L. and L.M., R.C.P. and S.Irel.	University College, Cork	3,203
A. H. C. Hill ...	M.R.C.S., L.R.C.P.	Middlesex Hospital and Vienna General Hospital	3,130
N. C. Kapur ...	M.R.C.S., L.R.C.P., B.A.Punjab	Lahore Medical College and University College Hospital	3,086
J. F. Holmes ...	M.R.C.S., L.R.C.P.	Medical Hospital, Calcutta, and Charing Cross Hospital	3,062
A. C. Macrae ...	M.B., Ch.B.Aberd.	Aberdeen University	3,057
H. S. G. Haji ...	L.M. and S.Bombay, M.R.C.S., L.R.C.P.	Grant Medical College, Bombay, London Hospital, and Cambridge University	3,011
N. K. Bal	L.M. and S.Bombay, M.R.C.S., L.R.C.P.	Grant Medical College, Bombay, and Middlesex Hospital	3,008

Obituary.

WILLIAM LIVESAY, M.D.EDIN.,

FORMERLY OF SUDBURY, DERBYSHIRE.

WE regret to have to record the death, in his 68th year, on January 24th, at the Pines, Bembridge, I.W., of Dr. William Livesay, who practised for nearly forty years at Sudbury, Derbyshire.

He was born at Ventnor, and received his medical education at the University of Edinburgh, where he graduated M.B., C.M., in 1871, and took the M.D. degree in 1875. He interrupted his medical studies in 1869 in order to accompany Mr. (now Sir James) Lamont on a voyage of sport and discovery to Spitzbergen and Novaja Zemlja, acting as artist to the expedition. He afterwards edited the account of the voyage (*Yachting in the Arctic Sea*. London: Chatto and Windus. 1876), the book being profusely illustrated by woodcuts from his beautiful drawings in black-and-white and water colour. In those days photography was not the convenient process for travellers that it is now, and even water colour drawing was not easy where, as he has told the writer, his washes often froze on the paper. In 1871–2 he was successively resident surgeon to Mr. (afterwards Professor) Annandale and resident physician to Dr. Haldane, while he also received the distinction of being one of the Presidents of the Royal Medical Society.

As a student he took great interest in botany, obtaining a prize for a herbarium, and on his return from the Arctic he read a paper to the Edinburgh Botanical Society on the plants he had collected on that voyage. His interest in botany had an important influence on his life, for it was at the house of Professor John Hutton Balfour that he became engaged to a daughter of the late Dr. Thomas Shapter, of Exeter. He married and settled at Sudbury in Derbyshire, where he remained for the rest of his professional life. To his friends it was somewhat of a disappointment that he aimed no higher, but he was fond of the country and possessed private means which made earning a large income no special object. He enjoyed his life, and generally managed to get a month in Scotland every autumn, while he frequently travelled in the spring. He was an accomplished etcher, and an associate of the Society of English Etchers; but he published few plates. He designed book plates for his friends, and for many years sent them an etched Christmas card. About three years ago his heart began to fail; this was possibly connected with an attack of acute rheumatism in 1872; on the advice of his friends he retired from practice and went to live in the Isle of Wight, but last autumn his condition grew much worse and left no hope of his recovery. He possessed the gift of making friends and will be missed by a wide circle who appreciated his sterling goodness of heart, his love of fun, his ready wit and his genial sympathy.

He lost his wife many years ago, but two daughters survive who have devoted themselves to the work of the Wantage and East Grinstead Anglican Sisterhoods.

THE OBITUARY NOTICES OF DR. G. A. GIBSON AND OF DR. J. E. GARNER.

SIR JAMES BARR writes to us as follows:

The deaths of these two friends, whose obituary notices appear in your issue of January 25th, has cast a gloom over my household, as well as over many others. I should like to take this public opportunity of adding my meed of praise to the character and work of the deceased, and to add my sympathy, which has already been privately expressed, with the sorrowing relatives. Both men lunched together here at the annual meeting of the British Medical Association, both were in exuberant spirits and without the slightest apprehension of their premature decease. I say premature, though both were in the neighbourhood of 60 years, as neither had finished his life's work. Both had a fund of energy and capacity for work, which might have carried them at full steam ahead for many years. Both were hard-headed, industrious, intellectual Scotsmen, though cast in different moulds. Dr. Garner had the solidity and the tenacity of the Aberdonian, while Dr. Gibson possessed all the fire of the

Celt combined with the resourcefulness and energy of the Lowland Scot.

Such deaths often set me soliloquizing, and make me feel, in the language of the Sun-child in Butler's *Erewhon Revisited*, that "in the midst of death we are in life." How long will we remain so? "As for man his days are as the grass, as a flower of the field, so he flourisheth. For the wind passeth over it, and it is gone; and the place thereof shall know it no more." Why should strong, healthy, vigorous, intellectual men drop off about the age of 60 years? In a presidential address at the Liverpool Medical Institution in 1904, I said that to my mind it is a deplorable fact that many of the ablest and most popular members of our profession are cut off in the prime of life and vigour of manhood by disorders of the circulation, which are much more easily prevented than the so-called preventable diseases. Men who are engaged in directing others should teach by example as well as precept. I suppose the fact is that medical men are often too busy treating disease to devote much attention to its prevention, and the last individuals to receive attention are themselves. I am not an advocate of longevity for the mere sake of a long life. It is the fullness of a man's life which should count rather than its length. A man cut off in his prime may be remembered as an intellectual giant, whereas if he had existed till his cerebral arteries had become sclerosed, and he had become slow of thought and speech, or tended towards drivelling dementia, much of his former glory would have waned and the memory of him would quickly pass into oblivion. One of the most regrettable features of the present generation is their ephemeral memory of the great and good. Happy in life and blessed in death is the man who has got those near and dear to him to care for him, and mourn their loss.

I have known George Gibson for at least half my lifetime. There was a mutual affinity—because we were working on similar lines—which made us fast friends long before we met one another, and as years rolled on that friendship became more firmly cemented, so that the wrench which has now separated us I keenly feel.

My dear old friend, Dr. Garner, of Preston, was one of those warm-hearted, genial men whom to know was to love and esteem. He took a keen interest in the welfare of his profession, and was never actuated by any selfish motives. As an active and able surgeon to a county hospital he kept well abreast of modern developments in a well cultivated field. He took a keen interest in the Insurance Act as it affects the medical profession. I last saw him at the Representative Meeting on January 17th. He told me that he had had recently some anginal pains, and he promised to see me in the beginning of the succeeding week, but alas! on the first day of that week he had a fatal apoplectic seizure. He has gone, mourned and regretted by all who knew him.

BY the death of ALEXANDER MINTO MCDONALD, M.B., C.M., which took place on January 9th at his residence, 108, Gilmore Place, still another break has occurred in the ranks of the British Medical Association in Edinburgh. Though in indifferent health for several months, he continued his work till within a fortnight of his death. He was born in Crail, Fifeshire, but spent the greater part of his life in Edinburgh. Having completed his course and taken his degree in Pharmacy, he went on to the study of medicine at the University, and graduated in 1892. Soon afterwards he began general practice in the city, and some years later joined Dr. Stewart Stirling as assistant in the Skin Dispensary, Lauriston Place. On the death of the latter ten years ago he became senior medical officer of the institution. He was devoted to his work there, and that devotion was testified to by the very large attendance of grateful patients at Warreston Cemetery on the occasion of the funeral on Sunday, January 12th. Dr. McDonald was an elder in St. Cuthbert's United Free Church, and took a keen interest in Church work and in all schemes of social amelioration. For the long period of thirty-seven years he was connected with the Riego Street Mission for Young People, first as monitor and later as superintendent. A man of essential probity of conduct and of sociable and kindly disposition, he leaves a blank in the wide circle of his friends which will not easily be filled, and a greater blank in the life of his only sister and life-long companion.

DR. W. WAKE CLARK, J.P., M.D.Edin., M.R.C.S., L.S.A., died, at the advanced age of 80, on Saturday, January 11th, at his residence in Wellingborough, after several years of retirement. He came of an old family long associated with that town, and was a direct descendant of Archbishop Wake; after pursuing his medical studies at Edinburgh, and graduating in 1856, he assisted Dr. Mash at Northampton, and succeeded to his father's practice in Wellingborough and several appointments in 1893. He was the first medical officer of health appointed when the Local Board was established, and only resigned at the end of 1912. Dr. Wake Clark joined the Volunteers when the movement began in 1859, and retired at the end of thirty-six years' service, holding the rank of lieutenant-colonel. He was the first officer in the Northamptonshire Volunteers to receive the V.D. distinction. He was an alderman of the Northamptonshire County Council. Dr. Wake Clark's funeral, on January 14th, was numerously attended, the procession being escorted by members of the 4th Battalion of the Northamptonshire Regiment, with the regimental band, the body receiving on its interment the usual military honours.

THE *Journal* of Grahamstown, Cape Colony, announces the death of Mr. GERALD EUSTACE FITZGERALD, L.R.C.P., M.R.C.S.Eng., at the Albany Hospital, on November 22nd. He studied medicine at St. George's Hospital, London, and was a member of the British Medical Association. He was surgeon to the hospital in which he died, and medical superintendent of the Chronic Sick Hospital, Grahamstown. He was deeply loved and respected in the city where he practised his profession, and his funeral was on that account one of the largest and most representative that has ever taken place in Grahamstown. A full choral service was held in the cathedral, and conducted by the Very Rev. Dean Vincent; the deceased was afterwards interred in the Anglican cemetery.

SURGEON JOHN MILFORD BARNETT, who died on January 24th, at the age of 82, was the son of Mr. Richard Barnett, of Belfast and Holywood. He was educated privately at Trinity College, Dublin, and at the University of Edinburgh, where he graduated M.D. in 1852; he became M.R.C.S.Eng. in the same year. He entered the service of the Honourable East India Company, on the nomination of the late Marquis of Dufferin, in 1853. As surgeon to the 26th Bombay Regiment N.I., he served with the Persian Expedition under Outram and Havelock, and was present during the forced march on Boorazjoon, the night attack and the battle of Khooshab, where he was wounded, as well as at the bombardment and capture of Mohumera and forts. He served through the Indian Mutiny. When Staff Surgeon at Asserghur he received the thanks of the Bombay Medical Board for his report on the Simrole Ghaut route to the front. He was Staff Surgeon to the Kattiawar Field Force against the Wagheers in 1860, and was promoted to Surgeon and Major in 1865. He received the medal and clasp for his Persian service. He retired in 1869 and settled at Holywood, co. Down, where for many years he devoted much of his time to philanthropic and temperance work. He left Ireland some fifteen years ago and settled first in St. Leonards, but afterwards removed to Bexhill, where he died. He leaves a widow, a daughter of the late General Brooke Boyd, and three daughters and four sons, one of whom is a Major in the Royal Army Medical Corps. Dr. Barnett lived a busy and useful life after his retirement from the Indian service, and while resident at Holywood was occupied in the work of numerous missions and associations in Belfast, including the Presbyterian Orphan Society for All Ireland. He was invited to the Indian Mutiny dinner for veterans in London some two years ago, but was unable to be present.

Universities and Colleges.

UNIVERSITY OF LONDON.

LONDON HOSPITAL MEDICAL COLLEGE.

A COURSE of lectures and demonstrations on neurology will be held on Mondays, Wednesdays, and Fridays during February and March, at 4.30 p.m., beginning on Friday, February 7th. Dr. Theodore Thompson will deal with lesions of the peripheral nervous system and spinal cord; Drs. Turnbull and Gordon Holmes with the pathology of the central nervous system; Dr. Gordon Holmes with clinical anatomy and regional diagnosis; and Dr. Henry Head with common diseases of the nervous system. The course is intended for senior students and post-graduates preparing for the diplomas in psychiatry. The fee is three guineas. Further particulars can be obtained from Professor William Wright at the College.

SCOTTISH INTER-UNIVERSITY CONFERENCE.

THE Scottish Inter-University Conference opened at Aberdeen on January 24th. The four universities (Aberdeen, St. Andrews, Glasgow, and Edinburgh) were represented, and Principal George Adam Smith, in welcoming the delegates, referred to the growth of students' representative councils, and said the system worked extremely well. He acknowledged gratefully their co-operation with the authorities of the university, and said that any suggestions they might put before the court would receive very careful consideration.

A motion that the President of the Students' Representative Council should attend meetings of Senate when motions affecting that council were under discussion was adopted. A motion was also adopted recommending that the vacations and terms of the four Scottish universities be concurrent, and that the vacations and terms of the faculties be as nearly as possible concurrent.

The conference was continued on Saturday, the 25th, when the following, among other, resolutions were adopted:

That an inter-university committee, composed of members of the Senatus of the different faculties of the four Scottish universities, be appointed to obtain information with regard to vacancies in the Government and other services, and to publish a list of any such vacancies at the four universities for the benefit of students.

That in view of the fact that students taking biology for the degree of B.Sc. (pure) are unable to complete their first science classes in one year, the period between sitting the last subject of the first science examination and the first subject of the final examination be reduced from one year to six months in such cases.

SOCIETY OF APOTHECARIES OF LONDON.

THE following candidates have been approved in the subjects indicated:

SURGERY.—†E. M. Brand.
MEDICINE.—*†G. M. Cordingley, *G. E. Cuttle, *†R. B. F. Frazer, *†J. W. Harrison, *G. R. Lynch.
FORENSIC MEDICINE.—J. A. A. Boddy, G. M. Cordingley, R. B. F. Frazer, H. C. C. Hackney.
MIDWIFERY.—G. M. Cordingley, G. E. Cuttle, J. A. Prendergast, L. C. Smith.

* Section I. † Section II.

The diploma of the Society has been granted to E. M. Bran.

Medico-Legal.

WORKMEN'S COMPENSATION.

A CORRESPONDENT asks for advice in the case of a workman who received an injury about a year ago resulting in the extraction of the lens and incapacity since. There is a difference of opinion between the doctor acting for the insurance company and other medical men.

*** As to precedents in law it would be advisable to consult a solicitor. The applicant for compensation must submit himself to the examination of the doctor paid for by his employer, and the patient can claim that his own doctor shall be present at the examination. We know of no precedent for a medical man representing the employer or the insurance company demanding that the patient should be treated in an institution under his own care. Our correspondent might consult the following books: *Diseases of the Nervous System Resulting from Accident and Injury*, by P. Bailey (London: S. Appleton, 1903); *Injuries of the Eye of the Employed and the Compensation Act*, by W. M. Beaumont (London: H. K. Lewis, 1907, price 5s.); *Industrial Diseases and Accidents*, by W. J. Greer (Bristol: J. Arrowsmith. London: Simpkin Marshall and Co., 1909, price 7s. 6d.); *The Eye and Nervous System*, by W. E. Posey and W. G. Spiller (London: J. B. Lippincott and Co., 1906, price 25s.); *The Diagnosis of Nervous Disease*, by P. Stewart, third edition (London: Edward Arnold, 1911, price 15s.).

Medical News.

THE King has appointed Dr. James Cran, of Belize, to be an unofficial member of the Legislative Council of British Honduras.

THE annual dinner of the West London Medico-Chirurgical Society will be held in the Wharncliffe Rooms, Hotel Great Central, Marylebone Road, on February 6th, at 8 p.m.

THE annual oration before the Hunterian Society of London will be given in the library of St. Bartholomew's Hospital by Dr. Edward W. Goodall, on Wednesday, February 12th, at 9 p.m.; the subject selected is serum sickness.

AT a meeting of the Royal Sanitary Institute, at 90, Buckingham Palace Road, S.W., on Tuesday, February 11th, at 7.30, Dr. Samuel Rideal will open a discussion on the eighth report of the Royal Commission on Sewage Disposal, on standards and tests for sewage and sewage effluents discharging into rivers and streams.

DR. HERBERT HAWKSWORTH, on the occasion of his retiring from Welshpool, where he has been in practice for thirty-one years, was, on January 16th, presented by his friends and patients with an album address and a wallet containing £260; Mrs. Hawksworth was on the same occasion the recipient of a sapphire and pearl pendant.

THE new Hounslow Hospital, which will provide accommodation for twenty-four patients, was opened by H.R.H. Princess Christian on January 23rd. The hospital, which is situated on the Staines Road, was built from the designs of Mr. E. Francke at the cost of £5,000, and replaces the old hospital in Bell Road, founded by Dr. Sydney some forty years ago.

THE usual monthly meeting of the Executive Committee of the Medical Sickness, Annuity, and Life Assurance Society was held at 429, Strand, London, W.C., on January 17th, Dr. F. J. Allan in the chair. The accounts for the year were considered, and it was shown that though heavy sickness claims and bonuses had been paid to members, the funds of the society showed an increase. The bonuses now paid at 65 are for substantial amounts, and it is hoped that after the next valuation they will be continued. Many letters from members are received at the office thanking the committee for the way their claims have been settled, and expressing satisfaction with the system of weekly payments. Prospectuses and all further information of the Secretary, Mr. Bertram Sutton, Medical Sickness and Accident Society, 33, Chancery Lane, W.C.

WE have received from the President, Herr O. von Angerer, a programme of the forty-second congress of the German Surgical Society, which will meet in Berlin from March 26th to March 29th. The official orders, programmes, and admission cards will be issued from 8 a.m. to 8 p.m. on Tuesday, the 25th, and on the following day from 8 a.m. to 10 a.m. The general meeting will be held in the forenoon of Wednesday, March 26th, and in the afternoon of the following Friday. Gentlemen intending to read papers or to make demonstrations are desired to announce their intention not later than February 12th. The Roentgen-ray demonstrations will be held at 8 p.m. on March 26th. The subjects selected for discussion are (1) duodenal ulcer, (2) the surgery of the brain and spinal cord, and (3) the treatment of tuberculosis of the bones and joints. Inquiries are to be addressed to the Secretary, Deutsche Gesellschaft für Chirurgie, Berlin N., Ziegelstrasse 10–11 (Langenbeck-Haus).

THE trustees of the Chadwick Trust have arranged a course of lectures on hygiene and sanitary science during March, April, and June. The first course of three lectures on hygiene of the home will be given by Mr. H. Percy Boulnois, M.Inst.C.E., at the Royal Sanitary Institute, Buckingham Palace Road, on Friday evenings at 8.15 p.m., beginning on February 7th. In April Dr. J. T. C. Nash will give a course of three lectures on the evolution of epidemics, at the London County Hall, Spring Gardens; and in June Dr. F. W. Mott will give a course at the Royal Society of Arts on nature and nurture in mental development. Lectures will also be given under the auspices of the trust in Manchester, Birmingham, Glasgow, and Bristol. The lectures in Manchester will be by Professor Henry Kenwood on the public milk supply; those at Birmingham, by Mr. E. P. Hill, M.Inst.C.E., on water supply. The lectures, which are intended for post-graduate and advanced students of engineering and medicine, are free. Further particulars can be obtained from the secretary of the trust, Mrs. Aubrey Richardson, 8, Dartmouth Street, Westminster.

Letters, Notes, and Answers.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* BRITISH MEDICAL JOURNAL *are devoted will be found under their respective headings.*

QUERIES.

ALIQUIS, who has a patient who wishes to try antidiphtherial serum for asthma, desires to know the proper dose, how often it is to be repeated, and whether it is given before or during the attacks.

M.R.C.S. asks whether extreme susceptibility to Coley's fluid has been observed in inoperable sarcoma of mamma, with involvement of mediastinal glands; and, if so, what dose is best, and what results, if any, have been obtained.

ANSWERS.

PORTABLE TYPEWRITER.

DR. J. M. CARVELL (London) writes: In reply to "G. P. B.," I would recommend the Bennett typewriter, sold by the Bennett Typewriter Co., 75, Cannon Street, E.C. It is, he says, portable, the measurements when in case being 11 in. by 5¼ in. by 2¼ in., and there is hardly any jarring of the fingers. The price is £4 4s.

TRANSFER OF PRACTICES.

A. 36.—In the transfer of medical practices the income from appointments is usually reckoned together with that from other practice, and the sum of all the professional emoluments constitutes the gross value. It is not usual to put a higher value on private practice than on appointments, and one year's purchase has been the average value of the latter; but not infrequently the amount estimated in the gross value from appointments is made conditional on the latter being transferred to the purchaser.

FOUL BREATH.

J. O. P. (Paris) writes, in reply to "A": Offensive breath in young people, when no local condition can be detected in the digestive or in the respiratory tract to account for it, should be regarded as due to a disturbance of the sympathetic system with perversion of the glandular secretion brought on by habitual masturbation. Many other signs for which no obvious explanation can be found are probably related to the same cause in the young of both sexes. Such are: Some degree of dilatation of the pupils, constant congestion of the nasal mucosa, frequent attacks of palpitation, abnormal sweating in the palms of the hands, the armpits, and the soles of the feet (sweat often foul-smelling), flushing and morbid blushing, offensive breathing, dry cough, etc. It will be seen that all these signs are referable to the vasomotor system and loss of general nerve tone. They may all be grouped together under the general term "sexual syndrome," and may exist either separately or in combination. For the treatment direct questioning and advice to the patient will certainly prove the most efficient means of cure. *Sublata causa tollitur effectus.* When the patient learns that such symptoms may occur as the result of his own injurious habit he is sure to exercise more self-control and bring about a rapid cure; otherwise all treatment may prove of little avail, or the complaint may recur under some form or other. Bromides and belladonna will be useful; tonics may be necessary, but care is required in their administration lest over-stimulation may contribute to the continuance of the evil practice; physical exercises may be recommended, provided they be sufficiently prolonged so as to induce considerable physical fatigue, especially of the lower limbs; mild, unstimulating diet, total abstention from alcohol in any form, and generally the avoidance of every thing likely to raise erotic feelings. In fact, the whole treatment may be summarized under the general formula—sexual rest and general sedatives and tonics.

LETTERS, NOTES, ETC.

DR. H. BOSHOUWERS (Haarlem) writes in reply to the first question of "A. M." (p. 148): If "A. M." will inject every two hours into the rectum a little glycerine enema syringeful of 1 or 2 grams of antipyrin dissolved in about 200 c.cm. of water, he will certainly keep away the after-pains (*morsi uterini* of the Italians). I may refer him to the *Therapeutische Neuheiten*, July, 1908, and *Deutsche medizinische Wochenschrift*, October 1st, 1908, where I described the treatment.

TREATMENT OF CHRONIC BRONCHITIS AND EMPHYSEMA.

DR. CHARLES READ (Hampstead) writes: Having derived so much benefit from the continued taking of heroin gr. $\frac{1}{12}$ and menthol gr. $\frac{1}{10}$ in the form of lozenges for the last two years, I think it may possibly interest some of my medical brethren if I give a brief account of my personal experience. I am now 75 years of age, and for upwards of thirty years I have suffered from occasional attacks of bronchitis, which have gradually passed into the chronic stage, with a considerable amount of accompanying emphysema. For the last two years I have regularly taken two lozenges at night, one on going to bed, and another later on if the cough or the breathing is troublesome, and sometimes, though rarely, a third, and their effect on me is most beneficial, soothing, and comforting. The menthol is a very useful addition to the heroin, for besides its own specific effect it diffuses a sense of grateful warmth through the chest. The heroin has, I think, an undoubted effect, not merely in soothing the cough through its action on the nervous system, but also in exercising a beneficial influence on the bronchial mucous membrane itself, modifying and checking its secretion. Altogether I am so much better than I was twelve months ago, the cough being now very slight and the mucous expectoration much lessened and of a simple character, that I cannot help attributing the improvement largely to the regular taking of these lozenges. I am not conscious of any heroin habit having formed, as I can omit taking them without experiencing any sense of desire for them. The lozenges are made for me by Messrs. Meggesant Co., lozenge manufacturers, of Miles Lane, Upper Thames Street, E.C.

STORIES OF HIPPOCRATES.

DR. JOHN HADDON (Denholm, Hawick) writes: The stories about Hippocrates in the JOURNAL, whether authentic or not, tend to prove the wonderful power of observation which he, no doubt, possessed. They remind one of the stories told of the late Dr. Joseph Bell, who stimulated the observant power of his students by the way in which he astonished his patients by the remarks he made, as to what they had been doing, or where they came from. Nevertheless, when Dr. Bell explained how he knew so much about one whom he had never seen or heard of before, there was no great mystery involved. We may never be able to tell how Hippocrates gained the power he possessed—so rare even in our profession, which ought to cultivate the power of observation more than any other—but we may try to explain the story told of his saluting the maiden who had lost her virginity. It could not be by her gait, as was the explanation suggested, but the blush that lends a beauty to the maiden's face when he first met her, and its absence on the second occasion, might quite easily account for the difference between the two salutations.

A ROYAL HOAX.

DR. CLIPPINGDALE (London, W.) writes: In the admirable articles which have appeared in the JOURNAL, preparatory to the meeting of the Association at Brighton this year, I have not seen reference to the hoax played upon the doctors of Brighton by the Prince of Wales in 1785. The Prince, who was in residence at the Pavilion, gave a party. Present at this party was a Mrs. Laurell. As this lady was unaccompanied by her husband she thought it discreet to leave early. She left about nine o'clock. Her early departure annoyed the Prince, who sent word that he would come and sup with her. This proposal not meeting with the whole-hearted sanction of her husband, Mrs. Laurell sent word to the Prince that she was unable to receive his Royal Highness as her husband was ill in bed. The Prince, observing that it was "a pity poor Laurell should die for want of a doctor," sent, about one o'clock in the morning, all the apothecaries, surgeons, and physicians (including his own physician, Sir Lucas Pepys) in Brighton to the residence of the Laurells, to find, of course, that their services were not required. (Lady Slanover's Memoirs of Mrs. Delany.)

TREATMENT OF METRITIS.

AN appliance for facilitating the administration of very hot douches in cases of metritis which has been brought under our notice presents some points of novelty and possible utility. It consists of a narrow metal tube for the introduction of the hot water, surrounded by (1) another metal tube for its escape, and (2) by an indiarubber sac or hollow jacket which, when filled with cold water, is intended to fit the vagina. This jacket ends in a cuff, which remains outside and protects the vulva from contact with the attachments of the metal tubes to those communicating with the douche-can and slop-pail respectively. The idea is that, thanks to this water jacket and its cuff, very hot injections may be applied to the cervix without any chance of the vaginal walls or vulva suffering from contact either with the heated irrigation tube or the returning stream of hot water. The name of the appliance is the Leedro double current syringe, and further information concerning it can be obtained from the Leedro Company, 6, Summerhill Avenue, Newport, Mon.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Eight lines and under	0	4	0
Each additional line	0	0	6
A whole column	2	13	4
A page	8	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *postes restante* letters addressed either in initials or numbers.